# Antiquity

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## Editorial Notes

THE outstanding archaeological event of a decade rich in surprises has been the discovery of the Indus Civilization and the publication of Sir John Marshall's account* thereof. Now an unknown civilization, if it turn up far away and isolated from more familiar ground, may leave the European archaeologist cold ; we are naturally preoccupied with our own continent and the adjacent zones of North Africa and Hither Asia from which Europe received enlightenment. No such aloofness is possible in the case of Mohenjo-daro and the civilization it represents. A whole series of links, from precious stones of Indian origin down to imports of actual Indian manufactures, establishes beyond all shadow of doubt the intimate connexion between the valleys of the Indus and of the Tigris-Euphrates round about 2500 B.C. And right on the frontiers of Europe two highly specialized types of gold bead from the ' treasures ' of Troy demonstrate the westward extension of the same nexus.

These discoveries are revolutionary : they demand a complete reorientation of our attitude towards the birthplace of civilization. The rôles of Egypt and Babylonia have been familiar from ancient tradition. Romantic faith in the legends of Greece led Schliemann

* *Mohenjo-daro and the Indus Civilization*, 1931, 2 vols. £12 12*s*. (Arthur Probsthain, 41 Great Russell Street, W.C. 1).

to Troy and Mycenae. Strictly scientific induction guided a man of genius to Knossos, where by a stroke of the spade he was able to set the products of Schliemann's digging in their proper context. But in India the by-products of railway building catching the enlightened eyes of Sir John Marshall revealed a civilization that had lain absolutely forgotten for 4000 years.

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This discovery has enlarged the domain of scientific prehistory, the area for which we may hope to establish a reasonably coherent system of knowledge, by some 750,000 square miles. In seeking the cradle of civilized life we are no longer restricted to Breasted's ' Fertile Crescent ' balancing the relative claims of Egypt and Sumer. The Nile indeed is found to be on the western edge of a vast constellation of centres of urban life.

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The intercourse between India and Sumer now established opens up a vista of caravans traversing the intervening deserts and crossing the mountain barriers, range after range, and of ships ploughing the waters of the Erythraean Sea 4500 years ago. That may help to banish the uneasy scepticism the more imaginative of us must feel when we read of Merchant Venturers in Bronze pushing up the Danube valley, or Ancient Mariners crossing the Bay of Biscay and rounding Cape Wrath leaving a litter of megalithic tombs behind them.

Again, the intercourse newly revealed was between highly differentiated and individualized civilizations. Mohenjo-daro is stamped with distinctively Indian idiosyncrasies, just as surely as pre-Sargonic Kish and the prehistoric graves of Ur are emphatically Sumerian and Old Kingdom Egypt is unmistakably Nilotic. Art and Religion, metallurgy and jewelry, are already completely specialized and exhibit arbitrary peculiarities which have persisted for millennia, some even to our own day.

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But that circumstance demands an enlargement of our chronological horizon no less drastic than in our spatial outlook ; the revolution is not confined to Euclidean space but invades the new space-time. For, underlying the very real differences between the three great civilizations, and transcending the superficial agreements resulting from mutual

intercourse, are fundamental uniformities so deep-seated, so comprehensive and so numerous, as to preclude the idea of independent origin in three areas later so closely interrelated. And indeed hints of connexion, vastly earlier than those hitherto considered, are not wanting. Lapis lazuli derived from Afghanistan is found in early Predynastic graves in Egypt ; a bead of amazonite from the Nilghary Hills of India was dug up from a prediluvian layer at Ur. And from hundreds of mounds extending westward from the Indus through Waziristan, Baluchistan and Seistan Sir Aurel Stein has collected sherds of painted pottery, fragments of stone vases, female figurines, stamp seals and beads of lapis or hard stone that must somehow link on with the similar material turning up at the base of every ancient site in Assyria, Babylonia and Elam. Whatever conclusions a scientific examination of the mounds and sherds may eventually justify, the scraps of evidence available suggest a continuum of less highly specialized cultures from which the Indian, the Sumerian and presumably even the Egyptian eventually crystallized out. But the process of differentiation, complete before 2500 B.C., must have taken very many centuries. And yet all these shadowy cultures emerging from this hoary background already possessed copper !

Here is a field for speculation. It might more profitably be regarded as a field for work. The province newly attached to the system of European-Oriental prehistory lies wholly within the British Empire. The conservation and proper examination of documents so vitally significant for human history is entrusted in an unique degree to us British and to our Indian fellow-subjects. A magnificent beginning has indeed been made ; thanks to Sir John Marshall, Mohenjo-daro has been excavated in a fitting manner, and, what is still more creditable, the results up to date have been published with a promptitude almost unprecedented in the annals of Oriental research. Sir Aurel Stein has undertaken a thorough survey of a vast and most inhospitable territory and has published, again with commendable rapidity, two richly illustrated reports on the epoch-making results of his tours. But this is only a beginning ; the prehistoric riches of India have only been scratched ; the results raise more problems than they solve.

It is an obvious duty for every citizen of the Empire to insist on the importance of preserving these sites against spoliation whether by

road-contractors or relic-hunters. To expect and demand much Governmental support for excavation in the present economico-political situation is manifestly vain. And those who have the knowledge, the time or the money must be ready to assist in the work of conservation, excavation and examination. What an opportunity these *tells* offer English capital and English science for probing back towards the beginnings of human culture! What a scientific career for anyone with the vision—and the knowledge !

Writing in the *Revue Archaeologique* (July-October 1931, 211) Dr Salomon Reinach, one of the editors, says :—' It is not enough, apparently, that the world should contain ten times more journals of art than it needs, and that new ones should be incessantly cast upon it. Now there is added a swarm of "Museum Bulletins" so numerous that it has become quite impossible to know of their existence and profit by them. For a long time past I have been appealing for a congress of librarians to discuss a remedy for this overproduction by putting on the black list superfluous publications, but it is the voice of one crying in the wilderness'.

We sympathize with the learned doctor, but not with his proposed remedy, which would in any case be quite ineffectual. The business of librarians (and, we might add, of learned societies) is to canalize, not dam, the waters of learning. We need more bibliographies. In England we have the nucleus of a bibliography of British archaeology in Sir Laurence Gomme's Index of Archaeological Papers, 1665–1907 and its supplements for 1908 and 1909. To have allowed this splendid work to be discontinued was a crime. In its published form the Index is difficult to use, but to transcribe its contents on cards (omitting a certain amount of rubbish) and rearrange them under subject-headings is not a superhuman task, and has been partially accomplished by the present writer. To complete it down to 1931 would be a formidable undertaking, but one not beyond the powers of the various archaeological societies devoted to the advancement of knowledge if each would become responsible for its own publications and card-index them.

# Two Greek Fortresses in Sicily

by R. G. COLLINGWOOD

THE two fortifications which I propose to describe are together unique in the history of military architecture. They are very like each other, but nothing else like them exists. The first of them, Euryalus at Syracuse, has been carefully planned and published by a professional engineer, Signore Luigi Mauceri, in an excellent monograph (*Il Castello Eurialo*, Roma, 1928); but this is difficult to procure—I only know of it, and have seen it, thanks to the kindness of Sig. Dott. Giacomo Caputo, of the Syracuse museum—and there is no other adequate description of the place, though no doubt Pauly-Wissowa's article on Syracuse will contain one when it appears. Moreover, in examining the remains I seemed to see evidences of afterthoughts and changes of plan which Sig. Mauceri has missed or interpreted in ways that I find hard to accept; and therefore, though my hasty inspection and rough plans are far inferior to his careful and skilful work, it may be worth while to place my surmises on record.

The other fortress, Selinus, has been most elaborately and beautifully published by Messieurs Hulot and Fougères (*Selinonte, la ville, l'acropole et les temples*, folio, Paris, 1910) whose results have been used in Pauly-Wissowa's article *Selinous;* but here again there is no description, I think, in English, and therefore as regards both sites an *oeuvre de vulgarisation* may be welcome to English readers. That is the chief aim of this article, whose only novelty, apart from the suggestions, mentioned above, concerning changes of plan at Euryalus, lies in the fact that the two fortifications are discussed together, with perhaps some improved understanding of both.

The plans which I give here are only sketch-plans from my own measurements, and do not profess to satisfy the demands of scientific accuracy, for which the reader must go to the works quoted above. I ought perhaps to warn him—it is an unpleasant duty, but at least it shows how little acquainted English readers are with these sites—that the photograph of Euryalus given in the *Cambridge Ancient History*, plates, vol. II, p. 12 (b), does not, as there alleged, show 'the remains

of rooms and a wide passage that was once underground ' ; it shows the innermost ditch, seen from the north, with the wall that blocks its north end in the foreground, and the piers of the drawbridge in the background.

## I. Euryalus

The original Greek colony of Syracuse, confined as it was to the island of Ortygia, was reasonably safe from attack by land. But the island was only a mile long by at most half a mile wide, and the town was soon compelled to spread to the mainland, and creep up the hill that slopes downwards to the island and the Great Harbour. This hill is a triangular plateau, nearly four miles long from east to west, and about two from north to south ; Ortygia lies off its southern corner. The edges of the triangle, except opposite the island itself, are formed by continuous lines of crag, hardly deserving the name of precipice, but mostly difficult of access ; its base is protected by the sea ; but its apex, on the west, runs out into a long ridge, narrow and steep-sided, but flat-topped.

This ridge is the tactical key to Syracuse. When you have gained its summit, the whole plateau of Epipolae stretches away in a smooth and gentle down-slope before you ; an army brought up by the ridge and deployed on the plateau can sweep eastward, unchecked by any natural obstacle, until it has overrun the whole triangle. On the other hand, if this ridge is held, there is no other way by which an army can gain the heights without grave difficulty—difficulty which in the face of opposition would become impossibility.

Euryalus, the ' broad nail ', is the name of the triangle's apex, the point where people coming along the ridge arrive at the plateau. Granted, then, that Syracuse has overflowed its island and spread to the mainland, any scientific scheme for its defence must be focussed on Euryalus. Elsewhere, the defence may be perfunctory; here, it must be as strong as the skill of military engineers can make it.

The ridge at Euryalus is only about 50 metres broad ; the engineers' problem is therefore a very simple one—to block this narrow ridge, where the ground is so constituted that a turning movement on the part of assailants is practically impossible. The fort whose remains still crown the ridge is based on a plan as simple as the problem : the plan of a roughly rectangular *enceinte* equal in width to the ridge itself and therefore entirely blocking it, defended on the west by a deep ditch.

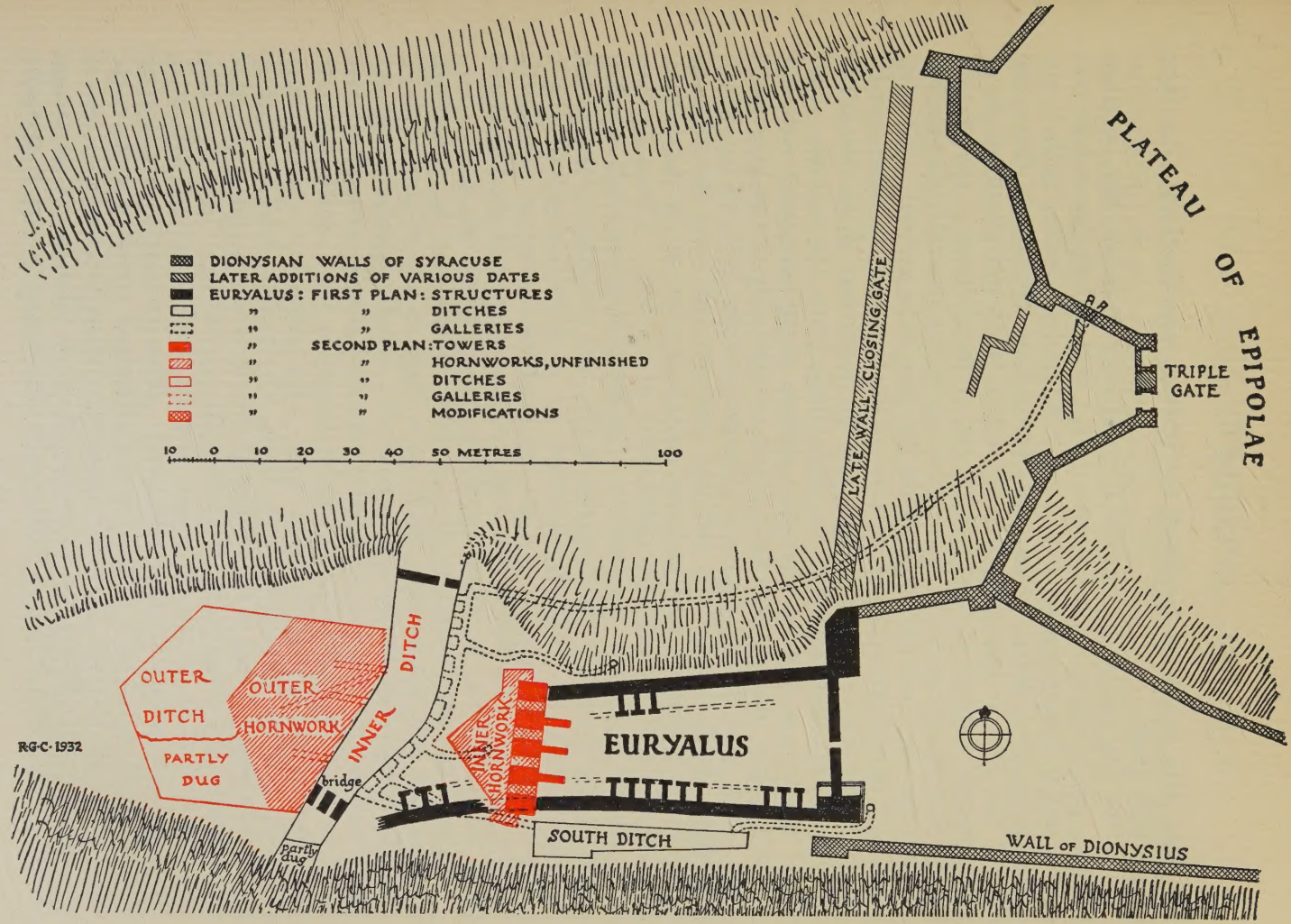



FIG. 1. SYRACUSE: the fortress of Euryalus with the adjacent part of the Dionysian wall (some of the late additions are omitted)

But this plan has been modified by adding complications of a very remarkable kind.

In the first place, the western front of the fort is not, like its other fronts, a plain wall 2·0 to 2·6 metres thick ; it is no less than 6·6 metres thick, and is composed of five solid rectangular towers, with lower curtains between them. Secondly, instead of one ditch there are three : the first or innermost 10–15 metres wide and about 10 deep, with smooth vertical rock-cut sides and a flat bottom ; the second like it, but 20 metres wide ; the third a slighter obstacle, 100 metres away to the west and not included in the plan here printed. Thirdly, there are external structures in advance of the five towers : these consist of two hornworks, one on the berm of the innermost ditch, the other on the ravelin that separates the first ditch from the second. And fourthly, there is a most elaborate system of subterranean rock-cut galleries. The main gallery runs along the east side of the innermost ditch, level with its bottom and communicating with it by eleven openings ; from this gallery, winding passages lead into the fort, up to the inner hornwork, up to a point outside the fort on its north side, and out to a still more distant point north of the fort. These last two are designed to help in the defence of a lower shelf of land, running along the north side of the Euryalus ridge, and carrying a road which passed through the walls of Epipolae by a skilfully-designed triple gateway, foreshadowing in its plan the courtyard gates of the fourth century. Other galleries, again, lead from the bottom of the innermost ditch up to the outer hornwork, and into passages beneath it.

These elements combine into a whole which may be described, ignoring the outlying western ditch, as a range of towers protected by two successive outworks each composed of a bluntly pointed hornwork and a vertical-sided ditch. The outer hornwork is an extremely massive structure in solid masonry, 50 metres in width from north to south and about 25 in depth from east to west. Its forward or western edges run exactly along the edge of its ditch, which, like itself, is bluntly pointed in plan ; there is no danger of the masonry crushing the edge of the ditch by its weight, for the whole ditch is cut in solid rock. The inner hornwork is similar in shape, but its ditch does not follow it, being pushed forward at its southern end. This irregularity of planning is clearly connected with a wall, having chambers attached to its north side, that runs forward from the southern end of the range of towers and seems to have thrust the southern end of the ditch out of its natural course. This wall, however, does not terminate in any very convincing

way ; it peters out on approaching the ditch, and has, moreover, been partially though not completely demolished, close to the towers, when the foundations of the hornwork were laid across its line.

This compels us to recognize that Euryalus, as we see it, was not planned all at once as a single whole. There were in fact at least two plans ; the second was begun before the first had been finished ; and, as we shall see, the second also was left incomplete.

Of the original plan (shown in black), so little was carried out that it is not easy to see at first sight what its designers intended. Plainly it included the north, east, and south walls of the fort as we have them ; the south wall, however, was to run on, with a very slight southward curve, following the curve of the crags, for some 30 metres beyond the southwest corner of the actual fort ; and the fort was presumably meant to terminate along the inner edge of the innermost ditch. The main gallery along the bottom of this ditch doubtless belongs to this plan, and so do the various tunnels leading eastward from it, together with the rock-cut ditch on the south of the fort, from whose bottom one tunnel (its roof is now collapsed) leads up into the fort and another down into the main gallery. The main ditch was meant, I think, to be cut right through the ridge ; on the north this has been done, on the south it has not ; yet one can see where, on this side, the digging of the ditch has been begun. A wall pierced by a postern has been built across the north end of the ditch ; had it been completed, one would suppose a similar wall at the other end. The piers of a drawbridge, still standing in the ditch, must belong to this stage of the plan ; there was to be a gate into the fort at its southwestern angle, leading to this bridge. Gate and bridge were thrust forward to serve as a sally-port for counter-attacking assailants on their defenceless right flank ; the ditch was laid out so that its bottom could be enfiladed from the gate-tower.

Before the construction of the west front was begun, the plan was altered. The five towers were erected ; we can still see that they are later than the north and south walls of the fort, for they are not of one build with them, and the southernmost tower is carried right across the line of the wall. These towers are not at right angles to the north and south walls, neither are they in line with the inner ditch ; but they are more or less in line with the inner hornwork just in front of them, and with the outer hornwork, and with the ditch in front of that. These, therefore, are the main elements of the second plan. We have already seen that the south wall of the first plan, in addition to being oversailed by the towers, was demolished to build the inner hornwork ;

the outer hornwork is plainly of one design with the ditch in front of it, but the ditch behind it cuts awkwardly across the whole plan of these outworks, which have had to accommodate themselves to it as best they could. Moreover, as confirming the idea that the two ditches belong to two different plans, it may be mentioned that the rock-cut tunnels leading west from the inner ditch are much neater in design and execution than those leading east ; the latter belong to the first plan, the former to the second, which is everywhere distinguished by the neatness of its workmanship.

But even the second plan was left unfinished. The hornworks were never built to their full height ; it would seem that they never rose above their foundations. The outer ditch was never completely dug ; about a quarter of it, at its south end, has only been cut a few feet deep, and the rest is much encumbered by stone that has never been cleared out. This stone has been described as material fallen from the outwork on the ravelin ; it is really one of the many signs that neither ditch nor outwork was completed. Again, of the tunnels that lead westward from the inner ditch-bottom, only one has been finished, namely that which leads up to the ravelin ; the others, doubtless intended to reach the bottom of the outer ditch, stop dead in the rock. And finally, the range of towers has been altered in a significant way. Originally these towers, except the north and south ones, were isolated structures with passages between, their tops being reached by stairs on the east. The intervals have been filled with walls not only independent of the towers but built of a differently coloured stone, that is to say, inserted at a different stage in the history of the work.

In order to understand the second plan, therefore, we must first of all open the intervals between the towers. Sig. Mauceri, having done this, proposes to fill them again with wooden gates ; but there is no indication that such gates ever existed, nor would they have served any useful purpose ; for enemy access to the line of the towers would be blocked by the wall of the hornwork in front of them. There is no indication that this hornwork was to be pierced by a gate ; it seems to have been intended as an unbroken line : and therefore the drawbridge over the inner ditch must be referred to the first plan, and was not required by the second. The defenders had access to the inner hornwork by the gaps between the towers ; thence they had a tunnel to the main gallery in the ditch below ; and thence again other tunnels would lead to the second hornwork and to the bottom of the outer

ditch, along whose eastern side a second gallery, with entrances to the ditch-bottom, was no doubt to run.

All visitors to Euryalus are struck by its resemblance to the classical fortifications of Vauban and his followers from the 17th to the 19th century. The angular hornworks, the ditches with vertical scarp and counterscarp, the covered way, seem to lead one right away from the ancient world and into the conditions of modern warfare. But, although there is a good reason for this impression, the parallel must not be over-emphasized.

Modern fortification depends on the principle that every part of the defensive system is a field of fire, in which nothing shelters an assailant from the missiles of the defence. The angular lay-out of the lines is designed to enfilade attacking parties, and the ditches are so planned that they provide no cover. But, at Euryalus, the ditches are completely ' dead ' ground from the walls of the fort ; no one inside them need fear missiles from the fort itself. In the case of the outer ditch, this defect is remedied by the fact that the hornwork comes right up to its lip, so that men on the hornwork have the ditch-bottom right underneath them ; but the inner ditch and the south ditch offer perfectly good cover from fire. On the other hand, they are commanded by galleries in such a way that hidden defenders can rush out and attack with the *arme blanche* anyone who has penetrated into them. This is the main principle of the ditch-system of Euryalus ; assailants reaching the bottom of the ditch are to be dealt with, not by archery or other fire, but by counter-attacks from the galleries.

At first sight this may seem strange. The existence of galleries that could be forced by assailants, or secretly occupied by them through neglect on the part of the garrison, might seem to weaken the defence. Why not leave the sheer thirty-foot rock-wall of the scarp to defend itself ?

The answer is that Euryalus was evidently meant to resist, not simply infantry assault, but siege-tactics. A ditch can be filled up, or siege-engines can be erected inside it ; but these things cannot be done if the ditch-bottom is exposed to counter-attack by defenders able to burn the engines or demolish the filling. This seems to be the main principle on which the original plan was based. But the second plan introduces an innovation, in the shape of five solid masonry towers, each 4·2 metres wide by 6·6 deep. (Plate 1). What are these ? Leake long ago suggested that ' balistic or catapeltic engines might be mounted upon the walls between the towers, like cannon in embrasures ' (*Notes*

*on Syracuse*, 1848, p. 17). He was right in the main, but he did not notice that the walls between the towers were subsequent additions to the towers themselves. The catapults were mounted on the towers ; and thus the second plan introduced an artillery defence, firing over the heads of the men in the hornworks at enemies, or their engines, beyond the line of the outer ditch. (Plate II).

It is time to relate these tactical ideas to the history of Syracuse. The fort of Euryalus did not exist in 414-413, during the Athenian siege. The Athenians approached the plateau of Epipolae by way of Euryalus, which therefore they clearly found unfortified. Gylippus came by the same road when he relieved Syracuse, so that even the Athenians, who had used it, did not fortify it against use by others. And Demosthenes in his last desperate night attack on Epipolae used it once more, storming the small fort—certainly not the present one—that had been built there in the meantime.

It was quite ten years later, apparently about 402, that Dionysius I built his wall right round Epipolae ; and Euryalus is either part and parcel of that wall or subsequent to it. The evidence of the structures, as now visible, makes it practically certain that what I have called the first plan was part and parcel of Dionysius's wall, and the second an afterthought added to the same great scheme of fortification. This gives us 402, or thereabouts, as the date of the original plan ; one ought to allow a few years for the construction of so elaborate a work, although the wall round Epipolae (a very simple earth-filled structure, whose stones are irregular in size and not carefully dressed) was built in great haste and finished within a very short time. The second plan must date within a few years of 402.

During these years the art of war as known to the Greeks was changing rapidly. Siege-engines were being improved, and the defence, which a generation ago had been stronger than the attack, was becoming weaker. The Spartans in the siege of Plataea, in 429, used battering-rams and tried to mine the walls ; but the Plataeans easily put their rams out of action and frustrated their sappers' work. The Athenians, at Syracuse, made no attempt to assault the town ; they contented themselves with the weapon of blockade, and used siege-engines (and that unsuccessfully) only as a last resort, against the Syracusan counter-wall. But the Carthaginians by 409 were using movable towers, as well as rams, against the Greek towns in Sicily, and covering their approach by a barrage of archery and sling-fire directed against the defenders on the wall. This method of assault worked with deadly

effect ; and if Dionysius was to save Syracuse from the attack which, sooner or later, Carthage was sure to launch, he must invent a corresponding method of defence.

He seems to have reached his invention in three steps. First, he decided to fling a wall right round Epipolae, using the crags as a natural obstacle to prevent the approach of rams and towers. It is a mistake to suppose, as some historians have done, that the whole area of this great *enceinte* was necessarily built over with houses ; the line was chosen as a measure of defence, not as a measure of town-planning.

Secondly, this wall was vulnerable to the Carthaginian engines at one point, and only one—Euryalus. Here, therefore, he planned a fort whose essential feature was a deep and wide ditch, a perfect obstacle to these engines, its bottom exposed to sudden and secret counter-attacks if the Carthaginians should try to erect their engines in it.

Thirdly, at this very moment the catapult was invented at Syracuse. Diodorus ascribes the invention to 399 (XIV, 42), and this date exactly fits the structural evidence. Euryalus, advanced in construction but still incomplete, was remodelled to mount catapults, and became the first artillery fortress in history. Five of these engines were placed on high towers behind the main defences, and swept with their fire the level ground in front. Dionysius's catapults were at first, it would seem, guns of position only. By 397 he was using them as siege-guns, mounted in emplacements and on ships ; but even then, at the siege of Motya, their function was only to clear the walls of defenders, not to batter the walls themselves (Diodorus, XIV, 51). It was not until a later date that they were made of such calibre as to be used in a battering-train—perhaps not until the time of Alexander the Great, who used them in this way at the siege of Tyre.

We must date the alteration in the plan of Euryalus, then, to 399 at earliest. Two years later, Himilco begin his campaign of re-conquest, and in 396 he attacked Syracuse. The storm which Dionysius had foreseen now broke ; but his preparations proved adequate. Himilco, encamped before Syracuse, failed to make any impression on it, and was finally driven off. It is surely evident that this was the reason why the second plan for Euryalus was never finished. The hornworks were only begun and the outer ditch only three-quarters dug when the alarm came ; and the fort was patched up into a defensible state by walling up the intervals between the artillery-towers. Even so, it sufficed. In those terrible years when almost all the chief Greek towns in Sicily were blotted out in blood and fire, Syracuse survived, saved by the

military genius of Dionysius to carry on the torch of Greek civilization in the west.

## II. Selinus

The essential features of Euryalus are a scarped plateau, accessible to siege-engines only along a narrow neck of land ; a deep, flat-bottomed ditch dug across this neck and commanded by a gallery or covered way in its bottom ; and a series of towers for artillery, sweeping the open ground beyond it. These features all reappear at Selinus, and, so far as I can find, at no other site in Sicily or outside it. It is therefore generally allowed that the fortifications at these two places must have a common origin.

The town of Selinus has an hour-glass or spectacle-shaped plan. The southern lobe is the acropolis ; it ends to southward in cliffs standing over the sea, and its edges are everywhere abrupt, though not so steep as those of Epipolae. The northern lobe is rather larger and rather less steep-sided ; and the two are united by a level neck of land 70 metres wide.

The fortifications of Selinus are complicated, and present many problems which need not be discussed here. A simple wall, 2·1 metres thick, seems to have run all round the northern town ; but the acropolis was terraced to east and west by a massive and beautifully-built retaining wall, still standing to a maximum height of 9 metres. Monsieur Fougères would date this ' oeuvre colossale ', as he rightly calls it, to about 580, nearly half a century after the foundation of the town. To the south, along the sea-cliffs, the great terrace-wall is replaced by a simple structure 2–2·1 metres thick, like the wall of the northern town. Along the east side of the acropolis an outer wall has been added at some later date, running parallel to the great terrace-wall and close to it ; Monsieur Fougères points out its resemblance to the ' fausse-braye ' of medieval fortification, itself derived from eastern concentric fortresses like the wall of Constantinople. The Selinus ' fausse-braye ' is, by its construction, certainly Greek, but I am not prepared to suggest a date for it. Finally, there are in many places remains of a much later wall following the line of the original acropolis fortifications ; it overlies a foot or two of soil, and one can hardly be wrong in calling it Byzantine, as Monsieur Fougères does, or roughly medieval. I have not marked this wall in the plan here reproduced.

Of all this I shall say no more ; my business is with the northern defences of the acropolis. Here, the fine masonry of the early sixth

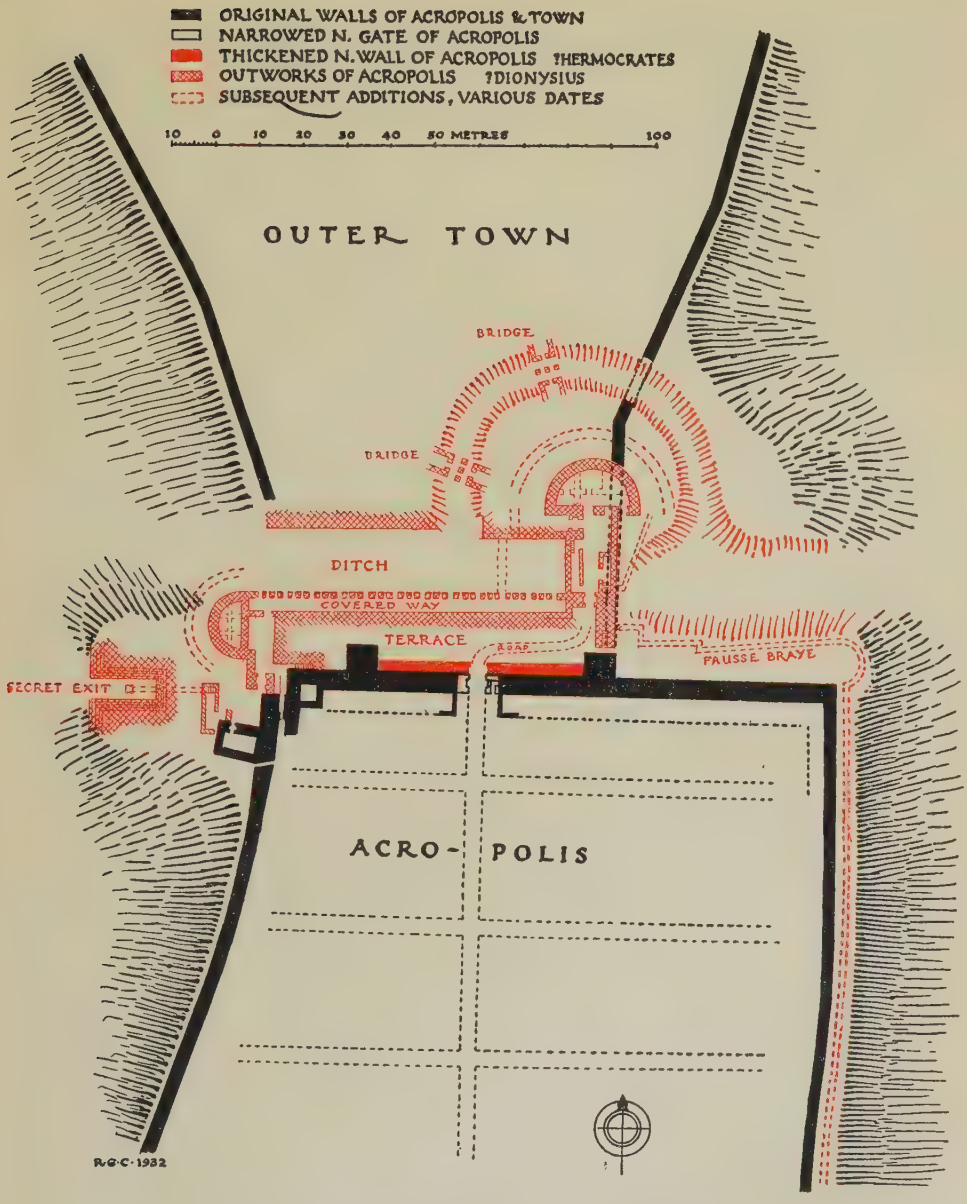



FIG. 2. SELINUS: plan of outworks at the junction of the acropolis and the outer town (some of the late additions are omitted)

century wall—accepting Monsieur Fougères' date—runs straight across the neck, forming a curtain 4·25 metres thick with a gate 8·8 metres wide in the middle. Thin return-walls on either side of this gate, in the same masonry, seem to have served as revetments for an earth bank behind the wall. To east and west of the gate, and about 20 metres away from it, are square towers which I took to be contemporary with this original wall, but I find that Monsieur Fougères regards them as additions, and the mistake is more likely to be mine than his. At some time subsequent to its original building, the gate has been narrowed to 2·95 metres by adding cheeks at either side ; at a later date again, the wall has been strengthened by adding a facing, 2·1 metres thick, running from tower to tower.

In front of this wall, and separated from it by a berm or terrace about 16 metres wide, is a ditch. Blown sand has obscured some of its features ; but it was about 12–15 metres wide and 4 deep, flat-bottomed, and with vertical masonry sides. Along its south side runs a gallery level with its bottom and opening on it by twelve doors ; between each door and the next are two loopholes permitting defenders in the gallery to sweep the ditch-bottom with archery fire. The gallery is reached by stairs and a passage at its west end, where a postern leads into the town ; it terminates in a semicircular tower commanding the entrance to the ditch and the slope that falls away to the west. From behind this tower a second postern gives access to the country outside ; and, as if this were not enough, an underground passage leads to a secret exit some 25 metres away from the wall, concealed in a sunken area with masonry sides. (Plate III).

The ditch is crossed by a solid causeway terminating in a horn-work. This consists of a second semicircular tower, defended by a ditch. The road into the fortified acropolis crosses this ditch by either of two drawbridges, bends round the western corner of the tower and passes through a gate, after which it traverses the causeway between mural chambers, turns on to the berm, and so reaches the main gateway. A postern leads out at the eastern side of the hornwork.

All this complex of outworks—ditch, causeway, gallery, and two semicircular towers—is of one build and forms one coherent plan ; and the plan is in principle that of Euryalus. The towers can only be understood as batteries or emplacements for artillery. One covers the main approach from the north ; the other, the western slope by which assailants might bring up their engines into the ditch. Instead of five small towers each mounting one catapult, we have two large ones

# PLATE I

EURYALUS FROM THE WEST

The five towers (the fifth just begins at the right of the plate) have been built standing free: the masonry between them is later (note the difference of the stone). The masonry of the inner hornwork is visible in front and on the left; on the right, the partly-demolished first-period wall is seen running almost towards the spectator. In front of all, the inner ditch.

*facing p.* 272

EURYALUS: OUTER DITCH

Looking northwest from the point of the outer hornwork. The figure, almost on the lip of the ditch, gives the scale.

SELINUS: THE COVERED WAY

Looking west. On the left, the terrace or berm; on the right, the ditch, its bottom level with the floor of the covered way and reached through doors. At the far end is the back of the western semicircular towers.

SELINUS: NORTH GATE OF ACROPOLIS

Looking north. Note the added cheeks narrowing the gateway: in the eastern one, a door leads into a mural chamber. The rough masonry on the top of the wall is the 'Byzantine' wall. Houses on either side of the street in the foreground; its paving hidden by blown sand.

each mounting a considerable number, and so placed as to cross their fire. The scientific use of artillery was far better understood at Selinus than it was at Euryalus, where the five catapults in a row were comparatively powerless to 'search' the neighbouring ground ; for instance, only one could be brought to bear on a column attacking the town gate north of the fort. Clearly Selinus is a more developed and later plan than Euryalus. But, if the artillery defence fails, and the enemy effects a lodgement in the ditch, he can be attacked and his engines destroyed by means of the covered way ; while an assault on the weak northwest corner of the acropolis can be taken in rear by a party using the secret exit. Further, these works are not only of one build, but they contain great quantities of reused stone from ruined temples, which suggests that they were built after the destruction of Selinus by the Carthaginians in 409.

There are many structures, added later, which modified this plan of fortification. The ' fausse-braye ' which I have already mentioned begins at the causeway and includes a third semicircular tower at the northeast corner of the acropolis, matching that at the northwest ; but this all seems to me a subsequent addition. So, even more certainly, are various other walls some of which are shown in broken lines on the plan. Tactically, all these are unimportant in their bearing on the general character of the works.

History tells us that Selinus was stormed and destroyed by the Carthaginians in 409. They are said to have brought up at various points six towers and six rams, with which they breached and entered the walls ; and it is a fair assumption that, however they entered the outer town, they must have reached the acropolis from the north.[1] Next year, the deserted city was reoccupied by Hermocrates, the ' hero ' (newspapers would call him) of the Syracusan defence against Athens. Hermocrates, whose portrait stands out from the pages of Thucydides with the brilliance of a Velasquez, was a fine soldier and a fine statesman. He saved Syracuse from conquest by Athens, and Syracuse repaid him with exile. He had correctly judged the Athenian threat to Sicily, and now he correctly judged the Carthaginian. Selinus had always been the outpost of Hellenism against the Carthaginian west, and Hermocrates saw that it must be revived. He went there

[1] M. Fougères places their main assault on the north front of the acropolis; but is he not forgetting that the outer town lay here, and must have been the primary object of attack?

with 6000 men, and, we are told, ' refortified a part of the city ' (Diodorus, XIII, 63), but fell next year in an attempt to re-enter Syracuse. Among his followers was one Dionysius ; wounded and left for dead in Syracuse market-place, he survived to become tyrant and saviour of Syracuse and to marry Hermocrates' daughter.

If we ask what part of the city Hermocrates fortified, the answer is plain : the acropolis. Can we credit him with the elaborate outworks on its north side ? He was a man of the highest intelligence, experienced in siege-warfare, and bent on securing Selinus against the Carthaginians, who had already once taken it in the teeth of a garrison far stronger than his own. Moreover, he was the master of Dionysius. Might he not have been the real inventor of the system which Dionysius used at Euryalus ?

It is tempting to answer this question in the affirmative. *A priori* objections, as that Hermocrates had too few men and too short a time for so elaborate a work, are inconclusive ; and the negative answer entails two awkward questions : first, if Hermocrates did not build these works, what did he build ? and secondly, if Hermocrates did not build them, who did ?

But the affirmative answer—already rejected by Monsieur Fougères, though on grounds not all of which are cogent—is, I think, ruled out by our analysis of Euryalus. If the defensive system common to the two places was applied to Euryalus after 402 only tentatively, with afterthoughts and alterations, it cannot have been borrowed from Selinus and embodied there in its fully-developed form by 407. A careful comparison of the two fortresses, carried out on the ground itself, will, I think, convince anyone that Selinus is an improved version of Euryalus in its final state. The system was invented at Euryalus, and then adapted to Selinus.

What, then, did Hermocrates do at Selinus ? He no doubt repaired the walls of the acropolis ; he may also have thickened its north wall, though of this I am not sure. Perhaps he only narrowed its gate. It is also very likely that he dug a ditch across the neck of land, obliterated afterwards by the outworks now visible. (Plate IV).

Our authorities tell us nothing of any fortifications by Dionysius at Selinus ; but they do tell us that he reoccupied it in his Motya campaign, and had to give it up by treaty in 383. Monsieur Fougères is surely justified in contending that this occupation gives the date to which the outworks of Selinus must be assigned. It is not clear that they were ever completed. Monsieur Fougères inclines to think that

the main gallery was never finished and never used : or at least that its roof was left incomplete, though admittedly it might be used in that condition.

The system of fortification invented, as we may conclude, by Dionysius I and used in these two fortresses never seems to have been used elsewhere. This cannot have been because it was found ineffective ; for undoubtedly it saved Syracuse, and Selinus only reverted to the Carthaginians by treaty. Nearly two centuries later Marcellus still regarded Euryalus as impregnable (Livy, XXV, 25). But the new fortresses of the generation succeeding Dionysius—Messene or Megalopolis, for example—show no attempt to follow his lead, and the general principles of Hellenistic and Roman fortification developed along other lines.

The reason for this, one may suggest, was twofold. First, the Dionysian method was far too elaborate to be used except on sites of a very special kind : sites naturally defended against the approach of siege-engines except on a single narrow front. Syracuse and Selinus are of this kind, but most towns are not ; and to throw a complete ring of batteries and covered ways round a large Hellenistic or Roman town accessible from many sides was impracticable. And secondly, the method was perhaps disproportionate to the danger against which it was a defence. We saw that Euryalus, even in its unfinished condition, withstood the Carthaginian assault ; and the fourth century experience of artillery seems to have convinced military architects that a plain wall provided with towers and mounting a sufficiency of catapults could be trusted to repel any ordinary assault. It was not until the invention of modern ordnance, with its greatly increased power of battering fortifications, that the principles first grasped by Dionysius were rediscovered and so developed as to lead to the creation of modern military engineering.

# The Oxford Excavations at Hira, 1931

by D. Talbot Rice

THE present age, as far as archaeology is concerned, may well be termed that of excavations, and Mesopotamia is more than any other country the centre of such activity. It is work on the most ancient sites that has come most before the public eye ; but later ruins too have received some attention, both before and since the war. Samarra stands and must long stand as the classical example of an excavation of the later period, but the recent work at Ctesiphon is no less competent and no less interesting. Greek Seleucia is now undergoing investigation by the Baghdad school and the Michigan University expedition and the ancient city of Kish has produced a Sasanian palace. Our work at Hira, some 50 miles to the south of ancient Babylon, now adds another name to this list, and though we made but preliminary soundings they served to show that the town of Hira was definitely an important and interesting place, the further examination of which will be without doubt well repaid. The work which we did was undertaken on behalf of Oxford University and was carried out under the joint direction of Mr Gerald Reitlinger and of the author of this paper. Most sincere thanks are due to Mr Reitlinger, who bore the entire cost of the expedition, and to Professor Langdon of Oxford, who greatly simplified our work by allowing us to become a branch of the Oxford-Field Museum expedition to Kish.

The city of Hira was founded sometime in the 2nd or 3rd century A.D., and for the next four or five centuries it thrived, not only as the capital of the Lakhmid kings, but also as a trading city and river port. We read that ships from India and China were even wont to ascend the Euphrates as far as Hira, where they discharged their cargoes for conveyance by land westwards and northwards. At a later date Hira became the centre, the very soul in fact, of pre-Islamic Arab art and literature. It was at Hira that the poets of the Age of Ignorance congregated and it was there that were nurtured many of the artistic manifestations of the Islamic period. It is thus to Hira that we must look for the origin of the idea of those desert palaces such as Mshatta

and Ukhaidir, even if the actual edifices themselves are not so certainly to be attributed to Lakhmid influence.

In its earliest days, however, the town was not quite so impressive a place as it had become by the 6th century. When the city first began to assume any importance it must have looked rather like one of those Arab villages which border the cultivated land of Iraq today, the dwellings of the populace being composed of mud or reed huts and only the buildings intended for public assembly being of a more durable or more spectacular nature. The very name implies this, for the word 'hira' in Arabic denotes something in the nature of a settled camp, and at a later date it became associated with the palaces or hunting-boxes which were built in the desert by the early Mohammedan caliphs, nomads at heart, who used them as refuges to which to escape from the settled life of the towns or the cares and worries of government and officialdom. These hunting-boxes were, as already noted, a tradition from pre-Islamic times, and what may be termed the father of all of them, Khawarnaq, was situated only a few miles from Hira. It was built by one of the Lakhmid kings of that city as a resort for Bahram Gur, then the son of the Sasanian Emperor. The prince was brought up and educated at Khawarnaq and Hira, and it was his guardian, the Lakhmid king of Hira, who at a later date secured his succession to the imperial throne.

Hira did not remain a village for long, however, and early in the 5th century was sufficiently established a city to boast not only its own kings but also a line of Christian bishops. By the end of the century there were even two distinct Christian sects at Hira, the Monophysite and the Nestorian, though the former seems to have remained the more powerful, in spite of the fact that the ardent monophysite preacher, Simeon of Beit Arsam, succeeded in obtaining a large number of converts. In addition to Christians there must have been at least three other religious communities at Hira. The town was within the confines of the Persian Empire, so that the state religion, Mazdaism, must have boasted a few followers, and where Mazdaists and Christians were found together, there must certainly have been adherents of the Manichaean creed. In addition to these religions there must be counted the old pagan cults of Arabia, and the majority of the Lakhmid kings seem to have remained faithful to such deities. One of them even sacrificed four hundred nuns to the Old Arabian goddess Al Uzza, an event which can hardly have pleased his Christian subjects.

The Lakhmid kings, although they were in theory vassals of the Sasanian Persians, were in fact more or less independent. They seem to have been supported by the Sasanians as a sort of buffer state between them and the Romans and Byzantines, just as these powers supported another Arab tribe, the Ghassanids, on the western side of the desert, to protect them from the direct attacks of Persia. But the Lakhmid kings not only protected the western frontier ; they also exercised a considerable influence in Persia itself. It seems probable that they eventually became rather too powerful, for in 602 the last of their line was deposed by Parwiz and a Persian governor was appointed in his stead. But the system thus inaugurated was not to last for long, for in 633 Hira capitulated, without any show of resistance, to Khalid on his first appearance in Iraq. The fact is surprising when we remember how close Hira was to Ctesiphon, the capital of the Sasanian Empire ; one would have thought that the Persian governor would have been able to put up at least some show of resistance. But it is explained by an examination of Hira's ruins, for there seem to be no traces whatever of a city wall.

From that day forth the standard of Islam was firmly planted in the region and though Hira continued to exist for another two centuries at least, during which time she probably remained a Christian city, her importance as a river port and as a trading centre gradually declined owing to the foundation of the new Moslem town of Kufa some four miles away. Hira's larger buildings were despoiled, so the Arab writers tell us, and the stones and bricks were employed at Kufa to construct the mosques and other new buildings of Islam. By the end of the 9th century there can have been little more than the mounds of mud and the heaps of broken bricks which survive today to mark the site of the ancient city.

Though none of the mounds of Hira are very high, the ruin-field is of considerable extent and it seems that throughout the ages the city, instead of rising up layer upon layer as did so many more ancient towns of Babylonia, gradually moved northeastwards, so that the present Kufa is some six or seven miles from the furthest extremity of Hira, where the oldest ruins lie. This distance is made up firstly by the ruins of Moslem Kufa, which extend to the southeast of the present houses for at least two miles, then by an open space and then by the ruins of Hira, which are again at least two miles across. The mounds of Kufa are bordered by the banks of a dry canal, beyond which is the open area, which was apparently never built over. It was at the

edge of this area that we began our work, in a mound which we called number I, and soundings were made in lines to the east and to the south of this point, extending in the one direction for about half and in the other for about one mile. These soundings were numbered in the former direction from II to VII and in the latter from VIII to XI. They showed us that the larger buildings had been dotted about here and there and that practically all the remainder of the whole area had been occupied by small houses of a single storey. A number of these were investigated and some of them proved to be quite elaborate, their doorways being adorned with jambs of finely carved stucco.

In addition to these houses, three larger structures were examined fairly thoroughly. These were mound I, mound V, and mound XI. The two latter turned out to hide the remains of churches, both of which probably date from the 6th century, though they had undergone repairs more than once at subsequent dates. A few lines of Kufic scratched on the walls of one of them prove that it was still in use after the Moslem conquest. These churches are long, basilica-like edifices. One of them, number XI, had three aisles, separated by circular columns of baked bricks. (Fig. 1). The walls are of mud, with pilasters of burnt bricks against them; the floors are of baked brick, set diagonally (plate I); the aisles were roofed by vaults. In building XI each aisle apparently had a separate barrel-vault above it, and the other church, number V, was roofed by a single span. At the east end there were in both churches three chapels of similar plan, their eastern walls straight and not apsidal. The rectangular plan of these chapels (figs. 1 and 2) is quite distinct from that of the usual Syrian or Coptic type of building, where the semicircular apse is characteristic, and it seems probable that the influence of the rectangular temple-courts of Babylonia and Assyria is to be traced here.

The type of church which we see at Hira seems to be a distinct one which was characteristic of southern Mesopotamia, for the German expedition at Ctesiphon found a church which is in plan practically identical. It too was roofed with a brick vault, and its doors, like those of the churches at Hira, were small and narrow and were placed at the sides. In Egypt, Butler notes that Coptic churches were invariably designed to have triple doors at the west end, though in actual fact the doors were often put at the sides owing to practical necessity. In southern Mesopotamia it seems that the side doors are an original and an intentional feature and not one forced upon the builders by exterior circumstances.

A further characteristic feature of the churches of Hira is a raised platform and screen at the centre of the nave, of which traces only remain in church number V, but which was perfectly preserved in number XI. A bench occupied either side of the platform, which must have served as a kind of throne for the elders. The screen, which stood to the height of a man's elbows, was immediately behind it

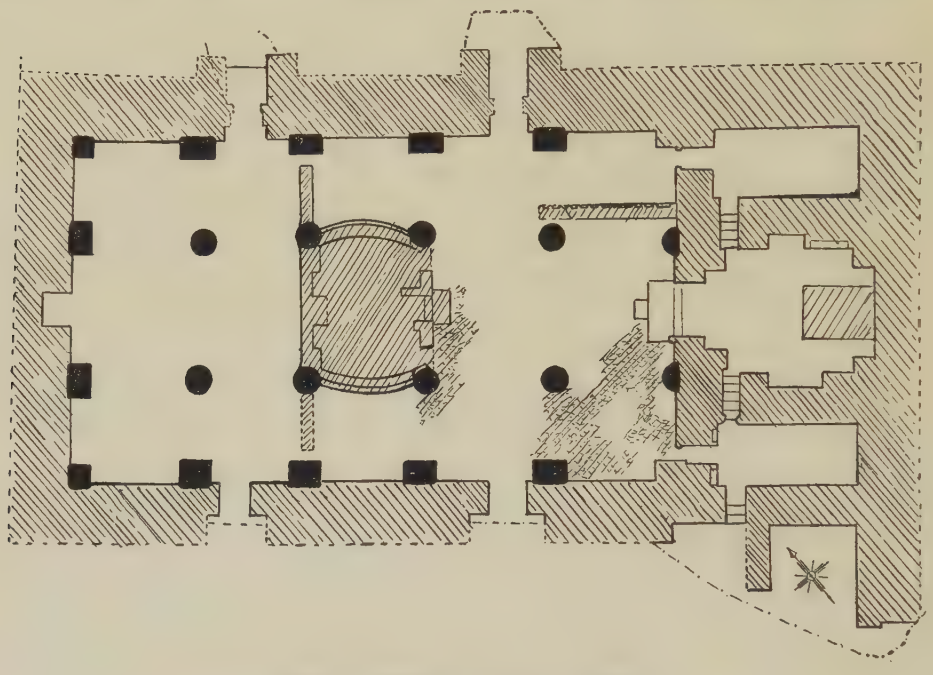


FIG. 1. CHURCH (No. XI) AT HIRA

■ Baked Brick. ≋ Mud Brick. //// Subsidiary Construction.
-•-•- Limit of Excavation. ---- Restored. ——— = 3 metres

(fig. 1). It may have served to separate the men's portion of the church from that reserved for the women, a division which also appears in the Coptic churches of Egypt.

The walls of our churches were covered with white plaster—as many as five layers laid on at different periods of repair were preserved in building XI—and in the eastern chapels elaborate wall-paintings were executed. A cross painted in red survived in the southern chapel of church XI (plate II). In the central chapels of both churches numerous fragments of painted plaster were found; a number from church XI

could be pieced together to form a cross, which is now on exhibition in the Ashmolean Museum at Oxford. One fragment bore what may have been the figure of an ' orante ', though this is the only indication that there was anything in the nature of representational art at Hira. In both our churches there were paintings of more than one period. The floors of the central, but not of the side chapels, had been raised

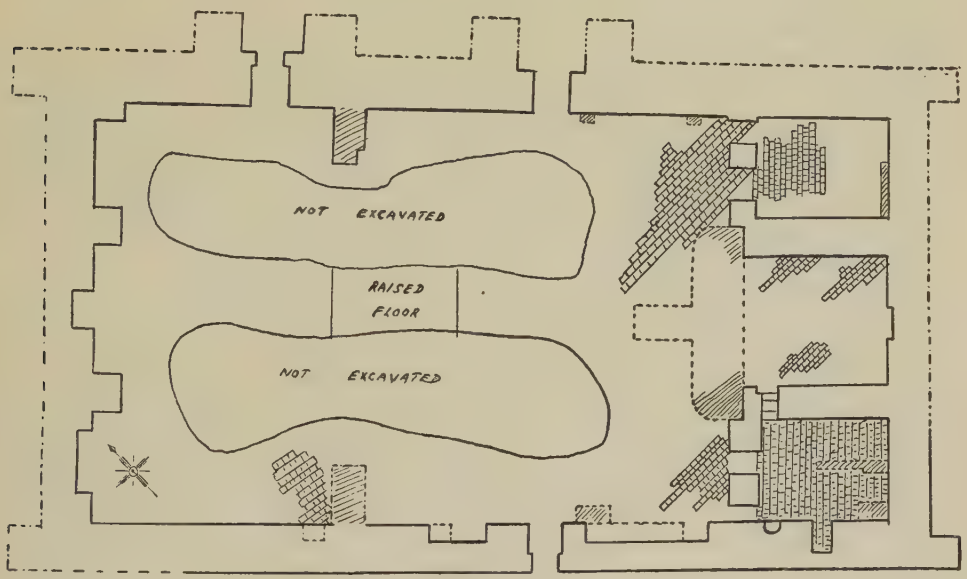



FIG. 2. CHURCH (No. V) AT HIRA

—— Original building. - - - Repairs or modifications. -·-·- Restored or not excavated.
//// Baked brick. ———— = 5 metres

at times of restoration and some fragments of paintings of an early date were found in the filling below the upper floor in church XI. In church V some of the early work remained on the walls, obscured by an upper layer. We were able to remove this and though the colours of the earlier paintings were very faint, enough remained to show that the work was of a much more Sasanian character than that above it, the colouring and style of which was more akin to that of the Moslem paintings at Samarra. The importance of these early paintings is considerable, for it is to the Christian paintings of Mesopotamia that we must look for the early stages of Islamic book-illustration, and it seems in every way probable that there may lie hidden below the soil

of Hira numerous examples of a more complete character than those which we found last winter. Mosaics too may await the explorer, for numerous tesserae, both of marble and of glass mosaic, were collected on the surface by our workmen.

In addition to the paintings, fragments of some small plaques of very fine plaster-work, bearing designs of which crosses are an essential part, were found in the filling of the churches. They are of two types, the design being either incised and coloured in red (fig. 3, a and b) or else left in relief, the surrounding ground being cut away (figs. 3 and 4). These crosses are of a distinctive type, the leaf pattern at the base being especially characteristic (fig. 4). A close relationship with crosses sculptured in stone which appear in Armenia about the 10th century seems certain; it is illustrated by a comparison of examples in relief (fig. 4, a and c), with such crosses as we see on the walls of the famous 10th century church on the Island of Achthamar in Lake Van (fig. 4, b).

In discussing the elaborate carved ornament which we see developed to such an amazing extent in Georgia and Armenia between the 10th and the 14th centuries, Baltrusaitis, in his book *L'Art médiaeval en Géorgie et en Arménie*, concludes that there is in Armenian work a great deal of Arab influence. The essentially mathematical character of this ornament seems to have appealed especially to their particular genius, he notes, and though the origin of many of the actual motives is to be sought in the earlier arts of Persia or Mesopotamia or even of Hittite Asia Minor, the spread of these elements is due to the Arabs. And here at Hira we see these crosses developed by Arab Christians on the age-old soil of Mesopotamia, several centuries before the earliest examples of which we know in Armenia. It is to such examples as this that we must look for the parentage of Armenian art and our Hira plaques are hence of the first importance. They are in addition very attractive little things, constituting in themselves minor works of art. They must have served as small 'icons' rather than as 'tiles' for attachment to walls, and the fact that all our examples have their edges rounded off shows that they were of a portable nature. They bear a purely formal ornament, nothing in the nature of figural art appearing, so it may be that we have here an example of that early non-representational art which Strzygowski regards as characteristic of the early Christian period in the Near East.

Our building number 1 was definitely of a secular character, and it appears to be, in part at least, of Moslem date, though the original

Fig. 3
DESIGNS ON PLASTER WORK, HIRA

Fig. 4
CROSSES AT HIRA AND ACHTHAMAR

plan is earlier. We were able to clear it more or less completely, so that a full plan could be made (fig. 5). It proved to be a fairly large construction with fourteen rooms and it must have served as a fort, small palace or large house. It had undergone repairs and had been reoccupied at various periods. The building stood to a height of two storeys, the walls of both following exactly the same plan. But those on the lower level had no doorways in them, so that the rooms must have served as cellars, accessible from above. At the period during which the floors of the upper rooms were last in use, however, the cellars had been filled in with sand and earth and the floors of the rooms rested upon this filling. Below these floors large pottery vessels had been inserted in places, their tops being bricked over. They must have been used as drains, the water soaking out through the porus clay into the surrounding soil (plate III). These large vessels are definitely of Moslem date and some small fragments of pottery which were collected from the filling of the cellars are akin to examples from Samarra and elsewhere, dated by Sarre to the 8th and 9th centuries. Coins from the filling of the upper rooms belong to Caliphs of the 8th century.

Our upper storey then, or anyhow the floor of it, is to be dated to this period. The entrance at this date was on the south side and it seems that the level of the surrounding soil was here already about two metres above plain level. A few steps only would thus be necessary to reach either of the doors which are marked on the plan. Today the soil has been so much washed down on this side of the mound that no traces of the approaches to these doors remain.

If the last period of occupation was in the 8th century, the first was certainly well in Sasanian days, though there is unfortunately no evidence to tell us the exact date. To this first period we must assign the large outer wall of baked bricks, measuring 26 by 26 by 5 cm., which is marked in black on the plan (fig. 5). It is the wall of some important building, to which the mud brick walls of the later structure within have had to adapt themselves, though on the south side these walls are actually built upon the baked brick wall. But our building within does not belong to the late date at which the large pots were inserted below the floors, for its original entrance was on the lower storey, in the corner of room II, and from here a stair, remains of which still exist, led to the upper level. Opposite the foot of the stair was a door which gave onto the space between the outer wall of the building and the baked brick wall, through which there was a second door, reached after a slight deviation (plan, fig. 5). This door was bricked up, and

indeed the whole space between the surrounding wall and the outer wall of the actual building was filled in with mud bricks, presumably when the cellars became filled with sand. (Plate IV). The arrangement of the various walls can be most clearly seen in the section, taken at the corner close to room II (fig. 6). The bricks of all three walls are of different sizes and a fourth type of brick is encountered within, for

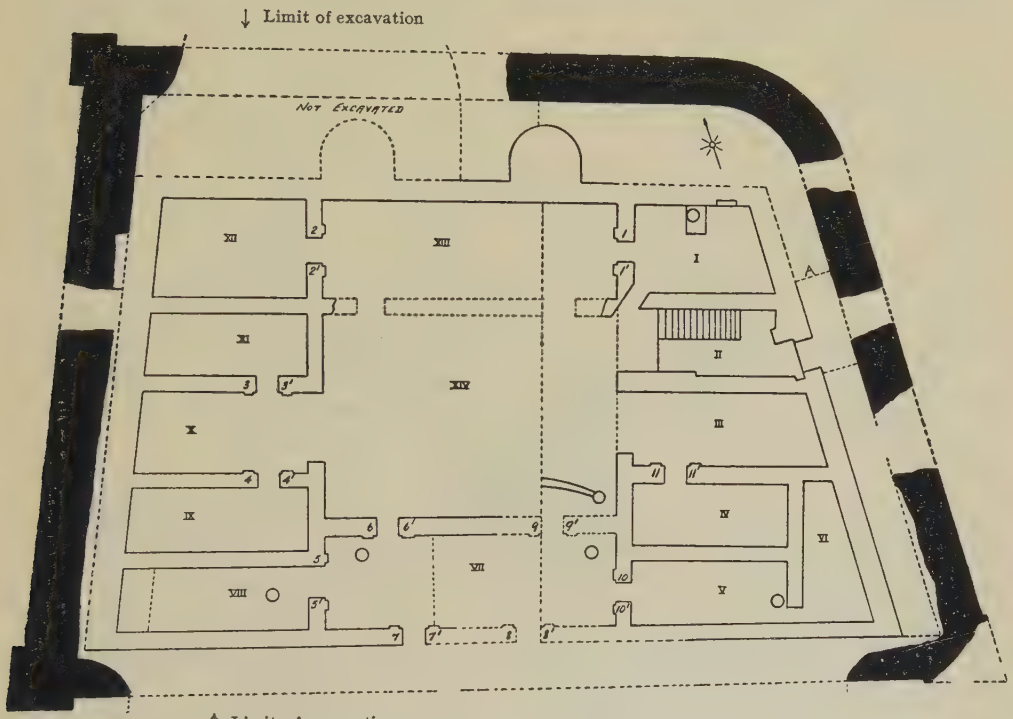



FIG. 5. PLAN OF BUILDING (No. I) AT HIRA

---- Reconstruction and limit of excavation. ——— = 5 metres

the doorways of the upper rooms were edged with small yellow baked bricks, each 18 by 18 by 4 cm. Such bricks have hitherto been considered of rather late date, but there can now be no doubt that they were used as early as the 8th century ; they may even have been employed during Sasanian times.

Our building hence belongs to three main periods. To the earliest is to be assigned the surrounding wall of baked bricks, each of them 26 cm. square. To the second are to be assigned the walls and

plan of the building within, the bricks of which measure 35 by 35 by 7 cm. To the third belongs the filling of the cellars, the building up of the space between the walls (bricks 27 by 27 by 11) and certain repairs in the walls of the upper rooms, if not the actual walls themselves. And it seems that the elaborate door-jambs of carved stucco, some of which remained *in situ* (plate V), must also be assigned to the latest period.

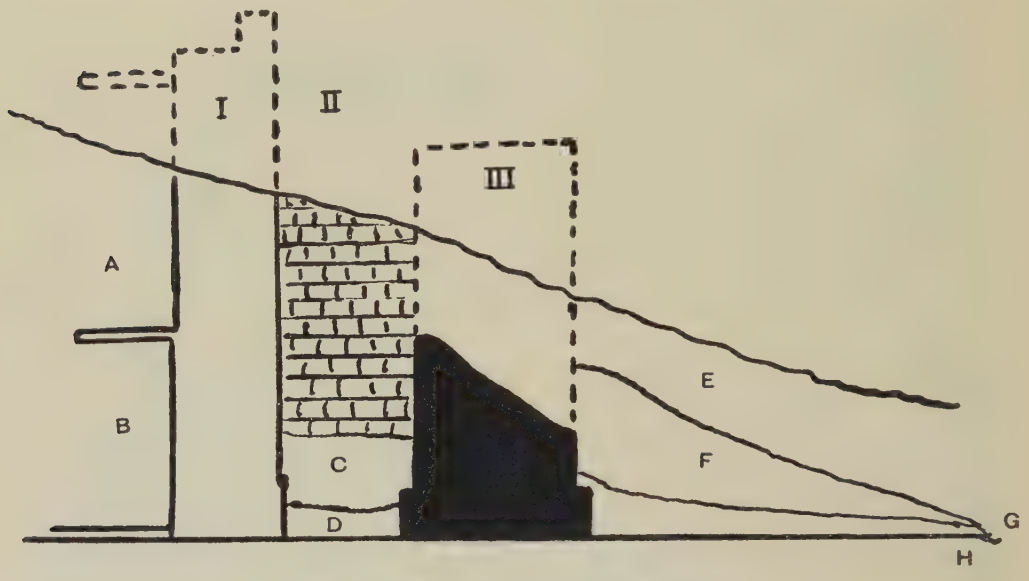



FIG. 6. SECTION OF BUILDING (see plan, fig. 5)

*Legend.* I, inner wall, mud bricks. II, filling wall, mud bricks. III, outer wall, baked brick A, upper rooms. B, cellars. C, filling of pounded earth, etc. D, filling of concrete. E, deposit, washed down from above. F, deposit of bricks and cement, fallen from wall III. G, deposit of cement, etc. Fragments of carved and painted plaster from here. H, natural sand

On the northern side of the building two semicircular turrets project from the wall (plan, fig. 5). Such turrets are characteristically Sasanian and their presence here suggests that our second period, to which they belong, is to be placed in Sasanian times, or at any rate only shortly after the Moslem conquest.

The sculptured door-jambs of building I were all different one from the other and in mounds III and IV further examples of similar type and date were also unearthed (plate VII). The majority are deeply carved; they show very elaborate workmanship and a considerable diversity of motives. The fine example from room 13 of building I shown in plate V was balanced at the opposite end of the room by the

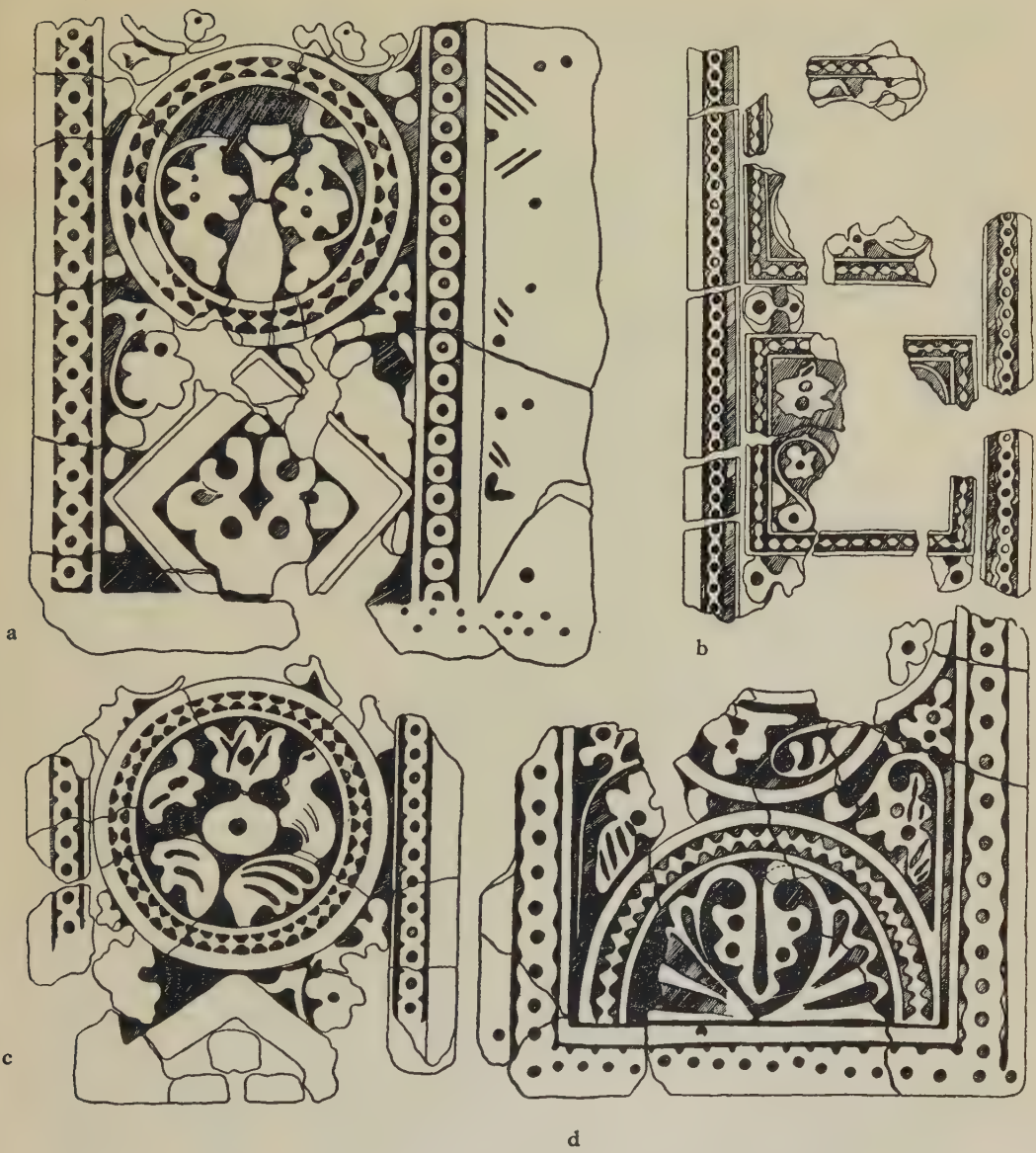



FIG. 7. SCULPTURED DOOR-JAMBS AND DECORATION AT HIRA

specimen shown on plate VI, the larger section of which was retained by the Baghdad museum. The looped motive is peculiarly suggestive of 'Celtic' ornament. Other motives of decoration on panels found in building I are shown in fig. 7, c and d, while plate VIII and fig. 7, a and b illustrate portions of door-jambs found *in situ* in the small houses of mounds III and IV, which bear palmettes or similar motives, often of a rather debased character. Figures 8a and b show fragments of similar door-jambs collected from the floors where they had fallen when the walls collapsed. Portions of two cornices reconstructed from fragments collected from the floors are illustrated in figs. 8c. These either served to top the doors or else they ran round the rooms at a given level. In building I, however, it seems that some of the doors at least were topped by arches, and fragments of similar arches were found on other mounds (fig. 8d, e and f). A number of fragments of a rather more delicate character are shown in fig. 8g–k, some of the motives being definitely based on the cross. The small pilaster (g) may perhaps have served as the frame to some sort of 'icon', such as those described above.

It is interesting to compare these stuccos with other examples known from elsewhere. Most closely akin is a door-jamb which was found by the German expedition at Ctesiphon a few years ago and which is dated to the 9th century. The ornament is practically identical with that of a door-jamb from one of the small houses at Hira (fig. 7, a), though our example is dated to the 8th century by stratigraphical evidence. Less closely, but still closely enough related, is the carving of part of the wooden mimbar at Kairouan, which is, according to Strzygowski, of Mesopotamian workmanship. It is of course far finer than anything from Hira, but the close similarity of many of the motives cannot be denied.

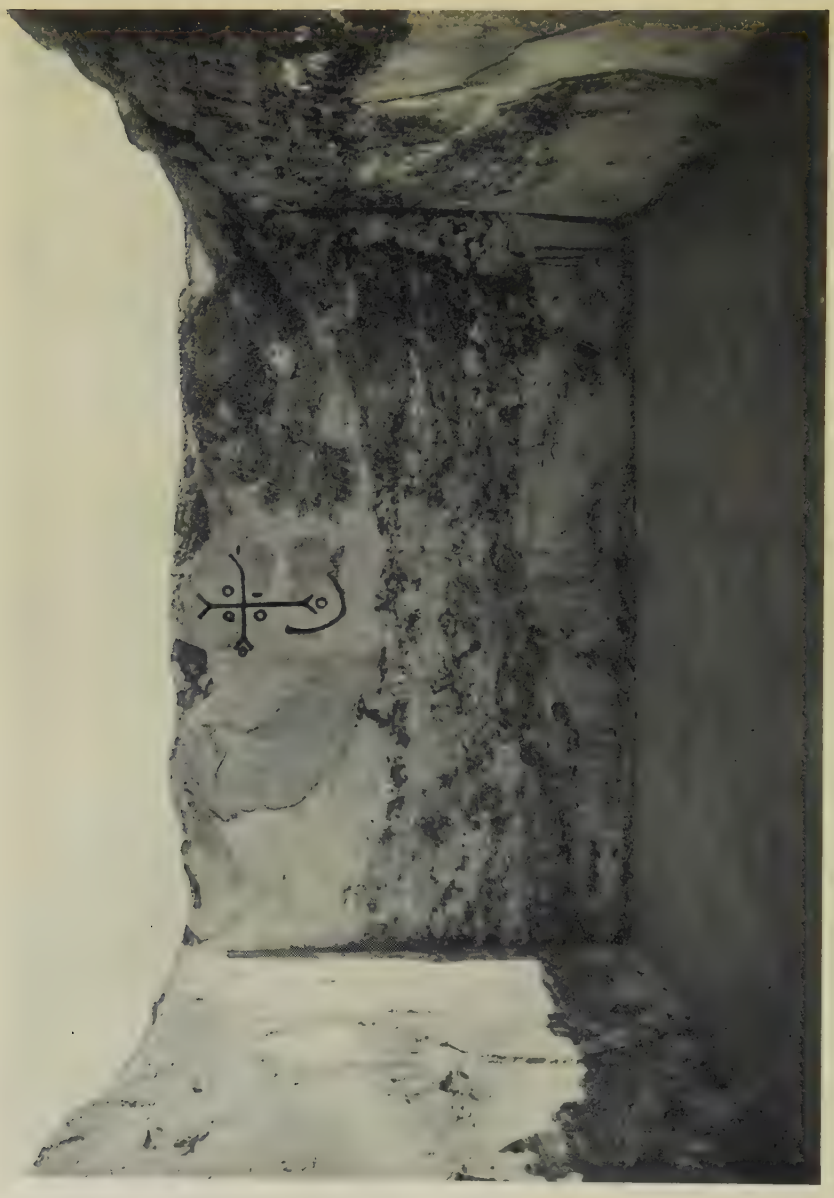
On Persian soil the exquisite work at Nayin which belongs to the 9th century shows motives which are closely related, though they are fairly obviously of later date, and a further development of the style is shown in the fine mihrad of marble at Cordova carved about 970. In Egypt the 9th century stuccos of Deir es Suryani illustrate a parallel development. Coptic grave-stones of the 6th century from the same country would on first sight again appear to be related, their plaited borders being well-nigh identical with those at Hira. But in this case the motives of the main decoration are dissimilar, and as the plaited band is an old Assyrian motive there seems no reason to postulate any very close relationship with Coptic Egypt. It is on the evidence of

PLATE I

HIRA : CHURCH XI, LOOKING EAST

*facing p.* 288

PLATE II



HIRA: CHURCH XI, CHAPEL OF THE SOUTH AISLE

PLATE III

HIRA : LARGE POT BELOW FLOOR OF BUILDING I

PLATE IV

HIRA : MAIN DOORWAY, BUILDING I

PLATE V

HIRA : STUCCO DOOR JAMBS, BUILDING 1

HIRA : STUCCO DOOR JAMBS, BUILDING I

PLATE VII

HIRA : SCULPTURED DOOR JAMBS, MOUND IV

HIRA: STUCCO DOOR JAMB, MOUND IV

FIG. 8. FRAGMENTS OF DOOR-JAMBS, CORNICES, ETC., HIRA

such grave-stones that Butler suggested a Coptic parentage for some of the Samarra pottery.[1] But the motives he cites would mostly seem to be of a Mesopotamian heritage and we see them in use at Hira a short time before they appear at Samarra and in Sasanian art at an earlier date still. It is to this earlier Sasanian art that we must turn if we seek to trace the parentage not only of these motives, but also of the Hira stuccos, and recent excavations have furnished us with quite a considerable amount of material. Of this perhaps the most striking is the carved ornament and figure sculpture of early Sasanian date found at Kish in 1931.[2] Pomegranates, palmettes, foliage and other motives which appear here are the obvious parents of many of the Hira motives, though at this later date they are depicted in a somewhat less pure and less precise manner. The same motives, and in addition bands composed of studs or loops, appear on stuccos from Ctesiphon which are to be dated to about the 7th century. Examples published[3] show that though some of the fragments are more Hellenistic in style and are very obviously earlier than the Hira work, others are more closely akin and would seem to be direct and not very distant ancestors.

Closely related again are stuccos found this winter by Dr Schmidt in a palace at Damgan in northern Persia.[4] We see here palmettes, acanthus and other motives which are obviously related to our Hira material. The Damgan stuccos are as yet undated, but they would appear to be fairly early Sasanian, belonging perhaps to the 4th century. They show Hellenistic influence to a marked degree.

The stuccos constitute the most bulky of the finds from Hira, but certain other minor objects are in reality no less interesting. First of these come the small plaques described above, the importance of which in the history of Near Eastern art we have already stressed. Next perhaps may be considered the glass, though few complete specimens were found. The necks of some small jugs, decorated with bands embossed in different colours, show extremely delicate work. Fragments of glass lamps, shaped like champagne glasses from church V, appear to be very closely related to types of Byzantine date from Jerash and other sites in Syria and Egypt.[5]

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[1] *Islamic Pottery*, p. 45. He illustrates a Coptic grave-stone on pl. 28.

[2] Published in *The Illustrated London News*, 14 February and 7 March 1931.

[3] ANTIQUITY, 1929, III, 44, pl. V.

[4] *Illustrated London News*, 26 March 1931.

[5] Crowfoot and Harden, 'Early Byzantine and later Glass Lamps', *Journ. of Egyptian Archaeology*, 1931, XVIII, pts. 3–4, p. 196.

Pottery fragments were fairly abundant. Of the glazed specimens most come from near the surface ; they belong to the Moslem period and are akin to types known from Samarra, Susa and elsewhere. A fine blue-glazed pot more or less complete with an impressed decoration, from a room in one of the small houses, is probably to be dated to Sasanian times. Some small pieces of unglazed ware from the filling of the cellars of building I would also appear to be Sasanian ; others belong to known types of 'barbotine' ware and are definitely of Moslem date. A well in mound II provided us with numerous sherds of commoner pots, which bear a graffito ornament around the neck and shoulder. Some of the motives, which consist of combinations of circles, curves and hatching, are quite attractive and they often suggest a survival of the motives of early times.

The Hira excavations were thus fairly productive as regards material. But they also furnished us with a considerable amount of information about a period of history of which we know very little. They give us some clue as to the nature of the life of a town which was for at least three centuries one of the most important cities of Arabia and Mesopotamia; they tell us of the early spread of Christianity in the East and they throw a certain light on some of the more vexed questions in the history of Eastern and indeed, in the whole of Christian art. Yet work was carried on for a month only, and we were unable to make more than soundings. We did not touch any of the earlier ruins of Hira; this remains for a future season, and it is to be hoped that funds will be forthcoming and that it will be possible to continue the work so admirably begun by Mr Gerald Reitlinger.

# The Paradox of Celtic Art

by R. E. M. Wheeler

IN the June number of Antiquity, Mr T. D. Kendrick sketched what in another sphere of art might be called a Conversation Piece. His subject was the family of hanging-bowls, and he assembled it with skill and daring in a new setting. His method was frankly impressionistic, and was proportionately stimulating. With the aid of a partly theoretical chronology, he inferred 'that in origin these bowls are really Romano–British; that many of them had been made and were in use before the Romans left this country; that others were made after the Romans had gone, and belong to the almost unknown archaeology of the Arthurian period'. To these conclusions it might at once be objected that, amongst the bowls, no dated example is of Romano–British period, and that they hardly occur in Arthurian Britain. But rather than press these objections, let us explore an alternative interpretation. Let us first state the problems and the relevant facts; then attempt to reconcile the latter with the former. This reconciliation will be no easy task, but with faith and hope on our side, and charity on Mr Kendrick's, it may at least be essayed.

Two main phases of Celtic art are recognized in the British Isles. The first (Pagan Celtic) begins in the fifth century B.C., and, apart from very rare survivals, ends in the second century A.D. The second (which may be roughly though incorrectly called Christian Celtic) begins about the sixth century A.D., and lingers on until about the ninth century. These two phases share that bold use of eccentric curves and swelling forms which at once distinguishes Celtic alike from Classical and from Teutonic art; but they differ also from each other in a number of important features. These features are too extensive, and perhaps too subtle, for satisfactory generalization; but they may in part be summed up in the assertion that Pagan Celtic art derives a majority of its motives from the classical palmette, whereas Christian Celtic art owes more to the classical pelta-pattern or

' Amazon's shield ', which had an extensive vogue in late Roman and post-Roman times.[1]

We are faced, then, with two individual phases of art which are at the same time linked by an essentially similar informing spirit and divided by a hiatus of three centuries of time. Such a hiatus is rare in the history of a single school of art, and some special explanation must be sought. It is not, in England at least, due to any lack of archaeological material within the missing centuries. Dated material of the third and fourth centuries, if not of the fifth, is abundant, and its negative evidence on this point is finite. A few scattered links may accumulate as time goes on : we have the semi-Celtic triskele on the Kyngadle patera, found with late third-century coins, and a bronze Celtic triskele from a fourth-century stratum at Verulamium (fig. 3). But strays such as these merely emphasize the barrenness of the land. There is in England a definite hiatus of three centuries in the history of Celtic art, nor is there at present any satisfactory evidence for this period either from Scotland or from Ireland.

But the problem does not end there. When Celtic art re-emerges after this long hibernation, it appears under conditions which are at first sight nothing less than astonishing. It appears first in the form of escutcheons on hanging-bowls which, when found in association, occur in pagan Saxon burials of the sixth and seventh centuries. Mr Kendrick has observed that about 15 of the bowls, or parts of the bowls, have been found under these circumstances, and that none has been recorded in any other association. Moreover, with the exception of a single outlier in Ireland and occasional strays in Scandinavia, where, it is agreed, they must be loot from Britain, these bowl-escutcheons are found mainly in the parts of England which were most intensively Saxonized. As Mr Kendrick's very instructive map (fig. 2) shows, a majority of them occur to the southeast of the Fosse Way.

Whatever we may like to think, therefore, these Celtic escutcheons belong to the Pagan Saxon period and to the Saxon areas of England. They are almost completely absent from those parts of Britain which, lying beyond the Saxon pale, must have remained dominantly Celtic. They are equally absent from the Teutonic regions on the Continent, and were certainly, therefore, not introduced by the invading Saxons. How are they to be explained? The paradox is a pretty one and

[1] For the pelta-pattern, see A. W. Clapham, *Archaeologia*, LXXVII, 227 ; and Wheeler, *Lydney Report* (Society of Antiquaries), p. 66.

provokes discussion ; but we shall get no nearer to a solution of it if we attempt to monkey with these basic facts. They must stand at all costs.

An artistic impulse, like life itself, defies ultimate analysis. We can no more really explain the genesis of a thing like Celtic art than we can really explain the genesis of a bumble-bee. All that we can hope to establish is a particular environment, a concatenation of specially favourable circumstances, which may reasonably be thought to have contributed to the genesis or regeneration of Celtic art in the time and place where that event in fact occurred. Nor need we envisage a long period of gestation, particularly in the case of an art dependent, like Celtic art, upon entirely decorative and non-animate motives. Round about 400 B.C. the Celts of Central Europe snatched at the classical palmette and almost immediately twisted it into the fantastic volutes of Pagan Celtic art. They could not do otherwise, for they were as incapable of a literal imitation of the classical palmette as were the later Celtic moneyers of imitating the chariot of Philip of Macedon. Similarly in that second phase of Celtic art we need not look for a long period of laborious preparation : our enquiry may be restricted merely to a search for the propitious circumstance, which may in the end have arrived quite suddenly. We are not, incidentally, concerned with the general history of hanging-bowls, whether they held incense in prehistoric Flintshire or geraniums in modern Pimlico. We are concerned only with the Celtic artistry with which certain of them were adorned in England in the sixth and seventh centuries A.D.

I propose to begin with an analogy—to tackle the second Celtic phase from the vantage-point of the better-known first phase. In view of the essential artistic unity of the two phases, this procedure is likely to be more helpful than such analogies sometimes are.

Now, it is recognized that Pagan Celtic art reached its climax in England during the first centuries B.C.–A.D. And if one were pressed to restrict more narrowly the period of culmination in central and southern England, one might indicate the period A.D. 1–60 as that of the two most skilful generations of Celtic craftsmen. Further north, the flower bloomed somewhat later. To the first half of the second century A.D. belong those Celtic or semi-Celtic ' trumpet-headed ' or ' harp-shaped ' brooches which Mr R. G. Collingwood has discussed.[2] These facts are suggestive.

[2] *Archaeologia*, LXXX, 37.

It is at once clear that the most luxuriant period of Celtic art coincides with the consolidation of political authority in the island, at first indirectly and later directly under the influence of Rome. In spite of romantic theories to the contrary, art does not flourish in a garret, particularly in an insecure garret. The golden periods of art have a solid bullion basis. Art demands both wealth and security—two factors which are, of course, closely interdependent. And in the period with which we are concerned, wealth and security began to come into southern England with the political and commercial expansion of the Tasciovanus-Cymbeline period, 30 B.C.–A.D. 40. The process was hastened and extended when the Romans came tumbling into the country in the year 43. For the first time, the whole of central and southern England was properly policed. Wealthy prospectors rushed into the promised land. For a moment the Celtic craftsman had such an opportunity as he had never had before. His technique was amplified by the addition of new enamels ; patronage and leisure were his. Then the tide of Roman mass-production burst upon Britain and engulfed the individual Celtic crafts. Within less than a generation of the Claudian invasion, Celtic art south of the Humber was swamped.

Let us take one example. Amongst the most mature products of Pagan Celtic art from Britain are the engraved and enamelled mirrors, dated by the Birdlip and St. Keverne examples to about A.D. 50.[3] These mirrors occur in Kent, Essex, Bedfordshire, Northamptonshire, Gloucestershire and Cornwall—*i.e.*, all, with the exception of a ' late and hardly typical ' example from Kirkcudbright, to the southeast of a line from the Bristol Channel to the Wash. Their period is one in which co-ordination and discipline were being introduced into that very region of Celtic Britain successively by Romanizing Belgic potentates and by the Romans themselves. The parallel with the sixth and seventh century Celtic escutcheons is almost exact : they too, as already noted, occur mainly to the southeast of the Fosse Way, and their period is that in which this region was being consolidated by the Saxons. (Compare figs. 1 and 2).

The period of social transition during which the engraved Celtic mirrors flourished in southern Britain was a brief one. The latest dated example—an ancient export to Holland—belongs to the latter part of the first century and shows every symptom of advanced

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[3] Reginald A. Smith, *Archaeologia*, LXI, 329.

FIG. 1. Distribution-map of engraved Celtic mirrors of the period of Roman settlement (mid 1st century A.D.)
(NOTE : the Scottish example is a variant which does not affect the distribution of the main type)

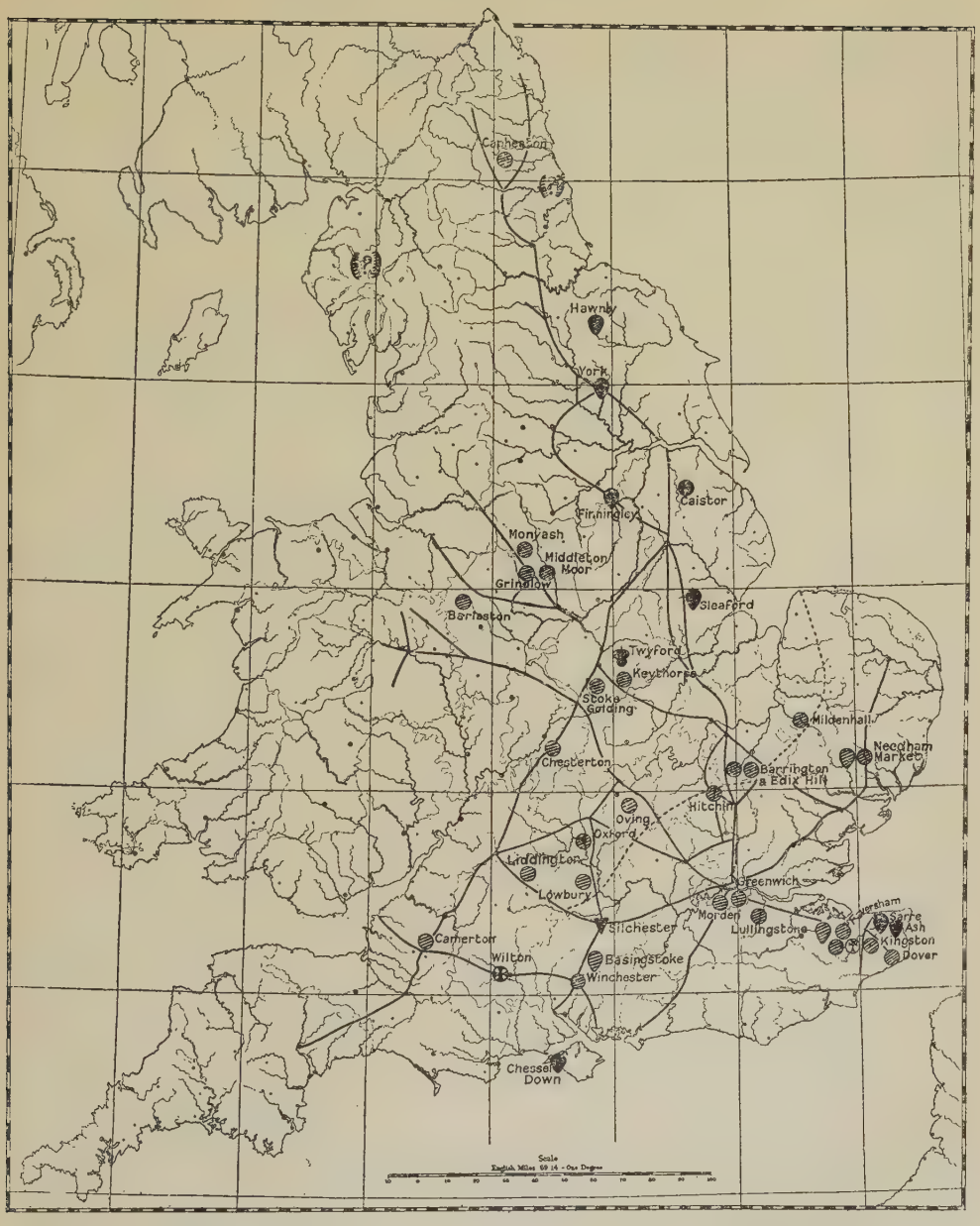


FIG. 2. Mr Kendrick's map shewing, by means of the *hatched* symbols, the distribution of enamelled bowls, mostly Celtic but of the period of Saxon settlement (*c.* 6th century A.D.). Compare with Fig. 1

decadence.[4] But north of the Humber an analogous sequence of developments now ensued. Here prior to the Roman conquest there was no equivalent to the Belgic development of southeastern Britain. It was not therefore until the final pacification of the Border-lands at the beginning of the second century A.D. that the settled conditions favourable to artistic enterprise supervened. Then it is that we get that northern school of Romano–Celtic craftsmanship referred to above. The moment that a compulsory neighbourliness and permanent markets were established, the Northumbrian Celt set to work. And since the Romanization of his region was less intensive and universal than in the more fertile south, he was less speedily overwhelmed by Roman mass-production than was his Belgic confrère. For two generations he preserved not a little of his own Celtic individuality. Then he likewise began to loose his grip upon the finer craftsmanship, and others took his place.[5]

The lesson of all this is not difficult to read. The Celtic artistic temperament was a plant of tender growth. It flourished in moments of security, but its intense individuality (two objects with identical Celtic decoration are of the utmost rarity) prevented it from surviving in the presence of organized commercial competition. Now, history shows abundantly that political coherence and security were never strong points amongst the Celtic peoples. It is therefore entirely natural to find that Celtic art flourished most readily when political and economic security were thrust upon the Celts by some external power (the semi-Teutonic Belgic princes; the might of Rome); provided that this external factor was not associated with too easy an alternative (such as the mass-craftsmanship of Rome).

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[4] G. C. Dunning, *Archaeological Journal*, LXXXV, 69.

[5] In the very interesting and important paper cited above, Mr Collingwood, discussing this northern Celtic art, over-emphasizes, I think, the significance of the supposed aesthetic factors and underrates the economic ones. He regards the 2nd-century Celtic trumpet-brooch of the north as 'a result of the stimulus given by classical art, even in a debased and mechanical form, to the British artist's mind'. This does not seem to me to fill the picture. As I state in the text, I prefer to look for the primary stimulus to a land flowing for the first time with police and money, but not yet flooded with intrusive mass-production. As soon as the northern countryside was organized and supplied by Roman mass-production, the native initiative lapsed. It is perhaps rather to this than (as Mr Collingwood suggests) to a hypothetical massacre of the Brigantes about A.D. 158 that the initial decline of northern Celtic art should be ascribed in the middle of the 2nd century; although a period of unrest, such as that which Mr Collingwood has in mind, would of course be equally destructive.

We are now ready to turn from the pagan phase of Celtic art to the post-Roman or ' Christian ' phase. Here it is necessary to recall two preliminary historical factors. In the disintegration of Romano–British life which followed the severance from Rome in 410, it is clear (in so far as anything in that period is clear) that the population reverted, at any rate in part, to conditions analogous in many respects to those which prevailed before the Roman conquest. Prehistoric hill-forts were reconditioned (Lydney, on the western shore of the Severn ; Cissbury Ring in Sussex), and petty kingdoms arose (Gildas). Uncertainty and poverty prevailed ; down-and-out humanity spoke with increasing awe and ignorance of the Good Old Times, and legend arose. Cut off from the easy mass-production of the Roman world, the Celtic or sub-Celtic population lacked at the same time the leisure and the comfort which might once more have elicited its native genius. Art and craft for a time lay moribund.

Then came the Saxon occupation. Teutonic farmers, obstinate but domesticated, began to settle in eastern and southeastern Britain, and to spread inland towards the midland plain. As villagers and farmers, these Teutons were essentially peaceful folk, and, after the initial conflict (renewed only as further territory was required) they settled down to their muttons. This Saxon Peace secured for the subject British population something of the comfort and leisure which, five centuries earlier, the Roman Peace had brought to their ancestors. At the same time the Saxon craftsmen, active though they were, did not so completely flood the country with mass-produced goods as the Romans had done before them.

Thus for the first time for over 300 years the Celtic craftsman, in the sixth century A.D. and under the Saxon régime, was freed alike from insecurity and from overwhelming competition. Under these circumstances, we might on general grounds expect some re-emergence of his art ; and the Celtic escutcheons are the answer to our expectations. On the frontiers of Britain, uncemented by Saxon settlement, that social and spiritual unrest whereof Gildas is a spokesman prevented any similar artistic regeneration until the Celtic Church, disciplined and consolidated by contact with the new outposts of Roman orthodoxy in England, and enriched by a far-famed proficiency in learning, was able to offer to the native artist a greater degree of congenial patronage and protection than was available amongst the yeomanry of England. Accordingly, in the latter half of the seventh century the centre of (Celtic) artistic interest shifts from Saxon England to the Celtic Church.

On this line of thought, the whole sequence of Celtic art, in my view, becomes as clear and logical as such subtle equations between temperament and opportunity are likely ever to be. On four occasions the Celtic artist in Britain found himself in that sympathetic environment without which his peculiarly sensitive and individualistic genius was unable to fulfil itself: first, during the Belgic and earliest Roman occupation of southern Britain, A.D. 1–60; secondly, during the earlier Roman occupation of northern Britain, in the first half of the second century A.D.; thirdly, during the Saxon occupation of central and southeastern Britain in the sixth and seventh centuries A.D.; and fourthly, during the régime of a strong and wealthy Church in Scotland and Ireland during the seventh to ninth centuries. In each instance, the essential circumstances were similar in kind, though they varied in degree. During a period of a millennium, an implicit Celtic art found expression, with numerous variations but an essential oneness, whenever and wherever the Celtic artist was given security and patronage without devastating rivalry; that is to say, where the economic conditions appropriate to his sensitive and almost feminine temperament supervened. So far as history is concerned, the basis of the problem is, I would urge, economic rather than aesthetic, and the proper perspective of the problem has been distorted, more often than not, through an over-emphasis of its artistic and typological aspects.

FIG. 3
Bronze triskele from a 4th-century stratum at Verulamium, 1931. $\frac{1}{1}$

FIG. 4
Celtic escutcheon (6th–7th century type), of bronze, enamelled in red and yellow. Possibly found at Oxford. *Pitt-Rivers Museum, Farnham.* $\frac{1}{1}$

# German fortified churches in Transylvania

by E. G. Sebastian

FROM very ancient times the church and the churchyard have afforded refuge to villagers in time of war. For this reason, wherever practicable, churches have been built on heights, to be the more easily defended. The church served not only as a house of prayer but also as a protecting citadel, defending the lives and property of its children. Already in the 4th century the Armenians had made strong citadels of their churches. The Franks in Merovingian times (481–751) built fortified churches of which that of St. Jean at Poitiers still stands, as well as the church at Remainmontier. After the Saracen invasion most of the churches in the south of France were surrounded with defence works, whereas in northern France they were not defended before the English wars in the fourteenth century. In the Middle Ages most of the churches in the strip of land between the Rhine and the Nahe, called the Gau, were fortified. Osthofen had defence works as early as 1241. In the Middle Ages, too, fortified churches were built in Alsace and Lorraine, or else the existing ones were greatly strengthened. An especially characteristic example is Chazelles in Lorraine, built in the 12th century, in which we are first struck by the placing of the church-tower between the choir and the nave and then by the loop-holes and machicolations.

In the districts of Werra, Römhild, and Heldburg and in all the neighbouring country of lower Franconia there are fortified churches which were probably built towards the close of the Middle Ages. They were also built in Bavaria, of which Köffler affords a good example, and in Krain, west Styria and lower Austria, where some of the churches are in a good state of preservation, such as St. Oswald at Eisenerz. When the Turks threatened invasions in 1603 and 1683 the churches in lower Austria were made as strong as possible, but they were unable to resist the attack and the defenders were put to the sword.

Much more thorough in construction are the fortified churches in Transylvania, distinguished by the variety and strength of their defence works and by their conversion into veritable strongholds.

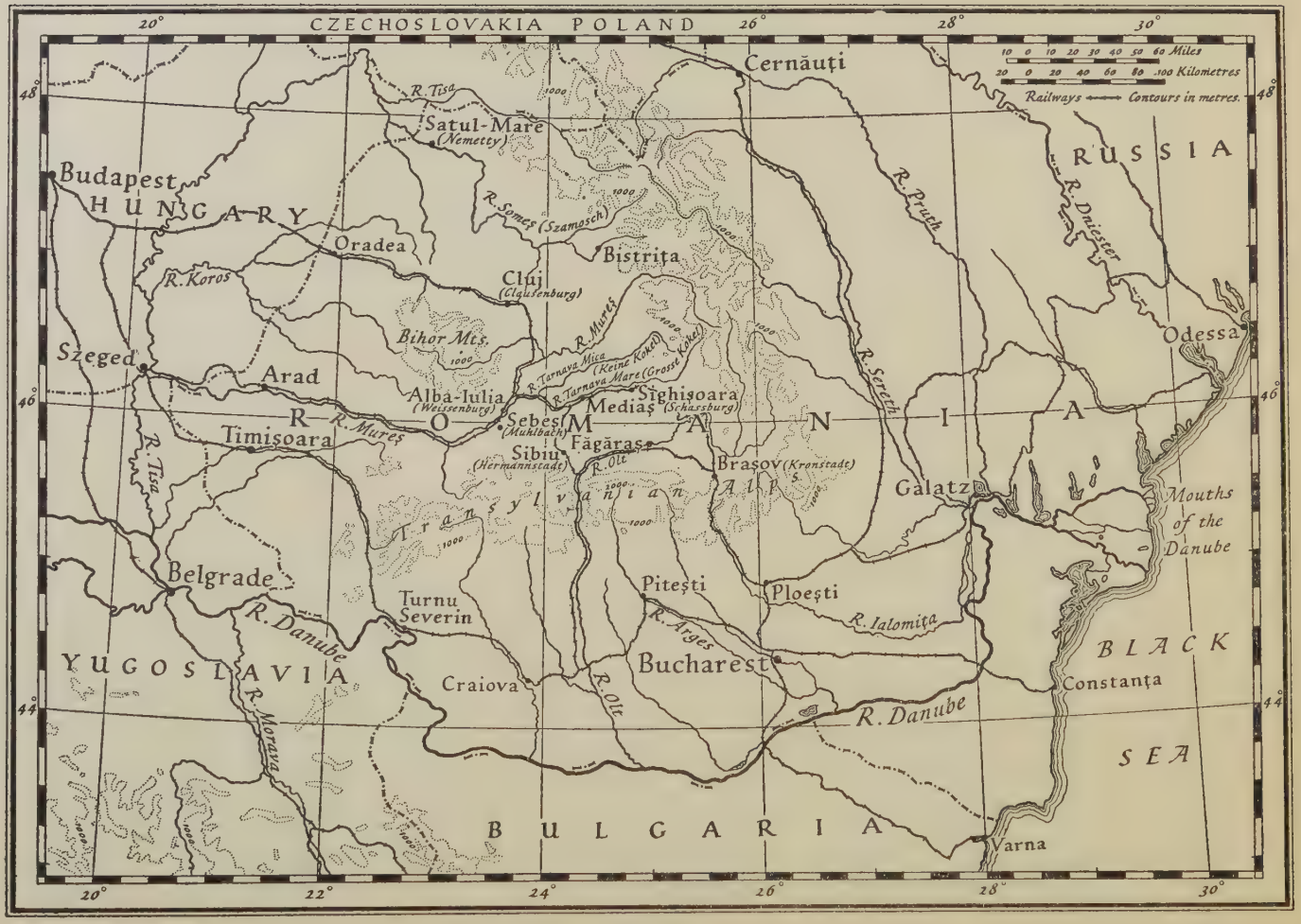

CZECHOSLOVAKIA
POLAND
RUSSIA
HUNGARY
YUGOSLAVIA
BULGARIA
RUMANIA
BLACK SEA
Cernăuți
Satul-Mare (Nemetty)
Budapest
Oradea
Bistrița
Cluj (Clausenburg)
Szeged
Arad
Timișoara
Alba-Iulia (Weissenburg)
Sebeș (Muhlbach)
Mediaș (Schaesburg)
Sighișoara (Schaesburg)
Sibiu (Hermannstadt)
Făgăraș
Brașov (Kronstadt)
Galatz
Odessa
Mouths of the Danube
Belgrade
Turnu Severin
Craiova
Pitești
Ploești
Bucharest
Constanța
Varna
R. Tisa
R. Somes (Szamosch)
R. Koros
R. Mureș
R. Tarnava Mica
R. Tarnava Mare (Grosse Kokel)
R. Olt
R. Argeș
R. Ialomița
R. Danube
R. Pruth
R. Dniester
R. Sereth
R. Morava
Bihor Mts.
Transylvanian Alps
Railways
Contours in metres.
Miles
Kilometres

Fig. 1

# GERMAN FORTIFIED CHURCHES IN TRANSYLVANIA

Though one is accustomed to think of the church as a home of peace and quiet devotion, in Transylvania, the borderland then between east and west, it was above all for centuries a bulwark against the horrors of war and streams of blood have flowed around its walls. These churches, of which there were in the 16th century as many as 300, had to shelter the inhabitants of the community and often for long periods of siege ; consequently they had to be completely self-contained and in all of them there was a well, and in some, such as Tartlau, a mill for grinding corn. They had to be built for this specific purpose, rather than hasty adaptations of former buildings. With this end in view their constructors triumphantly solved the problem of combining a church with a fortress. These churches are for the most part unpretentious works of art, but they are witnesses to times full of great anxiety and of bloody deeds. Few monuments of art can express so fully and peculiarly the spirit of a stormy, troubled period. As proofs of former struggles in Transylvania they acquire a very real historical importance.

The oldest Transylvanian fortified churches date from the 13th century. In 1241 the first Mongolian invasion laid Transylvania waste and the German colonists had to take steps to protect themselves against these wild hordes. They chose as the centre of their village life the church and they fortified it as well as they knew how. When, however, the Turks pressed forward into Europe and invaded Hungary in 1391 and captured Kronstadt in 1421, the fortifications were found to be insufficient. At that time practically every German village built its own fortified church or strengthened the existing building. It was necessity which called into being these remarkable buildings, ' whose aspect ', as a German writer says, ' at first leaves one in doubt as to whether one stands before a House of God or a fortress of unusual construction, churches in which the neglect of the exterior is sometimes carried so far as to abandon altogether ecclesiastical characteristics, so that one must enter to convince oneself of the religious purpose of the building '.

Most of these buildings were constructed between about 1450 and the beginning of the 16th century. There were, however, already churches on heights and surrounded with walls earlier than this, for in 1436 the Dean of Hermannstadt reported to Pope Eugenius IV that the Germans, when pressed by the Turks, took refuge in the fortified courts of their churches and that the church-towers, even the churches themselves, served as a bulwark against the attacks of the enemy.

The Transylvanian fortified churches belonging to the German villages may be divided into two main groups according to their construction. To the first group belong those in which the church itself has no defensive works, but relies entirely on the massive walls with their strong towers and bastions which surround them. Of these the majority are in the Burzenland, the plain round Kronstadt where the passes through the Carpathian Mountains to Kronstadt and to Törzburg open out into the plain to the north. Of these the most complete are Tartlau, which is described in detail later, Honigberg and Neustadt bei Kronstadt. In some of these it is true that the church-towers are provided with wooden galleries but they were more in the nature of watch-towers than for defence.

To the second and by far the larger group belong those churches in which in addition to having strong defensive walls the churches themselves are fortified, that is to say the actual church building. Of this group there are many types and we will take as type I, those in which there is a remarkable style of defence, namely a loop-holed defensive gallery running round the church, the wall of which is borne on arches resting on buttresses ; the whole wall is pushed forward to its own breadth so that between it and the church wall proper there is room for wide machicolations, which could be used for pouring pitch on the attackers, who came up to batter down the walls. A splendid example is Scharosch bei Gross Schenk, shown in plate I. Otto Piper, in his book on fortifications, mentions that this style of machicolation is peculiar to Transylvania. 'Beyond Transylvania', he says, 'I know of only one example of this style of machicolation, that is the church of St. Peter in der Au in lower Austria'. Of this type there are three distinct sub-divisions :—

Type Ia. The machicolated arches surround the whole building and the height of the church is uniform on the outside, there being no difference between the height of the choir and the nave. Examples of this are Scharosch bei Gross Schenk, Jakobsdorf, Keisd and Klosdorf.

Type Ib. The machicolated arches surround the choir only, which is generally built up higher than the nave. In all other respects the fortifications are the same. Examples are Bonnesdorf—this church is slightly peculiar, for the arches, which form the machicolations, are further supported each by a corbel between the buttresses ; Agnetheln —this was originally so defended but the defence works have been lately

removed ; Bussd bei Mediasch—here the choir has been built up very high but the defence works are the same ; and Gross Kopisch, Gross Schenk, Meschen, Pretai, Roseln, Stein, and Trappold.

Type Ic. Here only the nave of the church is defended in this peculiar way. Examples are Bodendorf, Radeln and Wurmloch—in the case of the last the nave is defended by the usual arches carried on buttresses, but in addition the choir has been built up very high indeed and also has arches borne on buttresses. I have not, however, included this church in type Ia, since the nave and the choir are not of the same height.

Variations of the first two of these types exist, in which the machicolations are formed by arches resting on widely-spaced buttresses, in between which are corbels also helping to bear the weight of the arches. A good example of this variation in type Ia is Bussd bei Reussmarkt, and of type Ib Klein Schelken shown in plate II. The high built-up choir can be seen on the right. On the side facing there are four buttresses and between each pair are four corbels, all of which help to bear the weight of the gallery above and leave space for machicolations.

Type II. In this type the choir has been built up high, often into a massive tower, but there are no arches built out on buttresses. It is surrounded as a rule by a stone or wooden gallery, as can be seen to right of plate III, which is of the church at Eibesdorf. As can be seen most of the loop-holes have now been filled in. The best examples are Almen, Bulkesch, Eibesdorf, Heltau and Hetzeldorf.

Type III. In this type the height of the choir and the nave are the same and they carry no arches. Generally only the choir is surrounded with a stone or wooden gallery with loop-holes. In the case of the wooden galleries they are generally built out sufficiently far to allow of the pouring down of pitch. This type can be divided into (a) those with stone galleries : Baasen, Birthälm, Dobring, Frauendorf, Galt, Grossau, Katzendorf, Margarei, Neithausen, and Waldhütten ; (b) those with wooden galleries, or galleries which have been built up with brick and plastered over as in the case of Klein Schenk in plate IV, the best examples of which are Deutsch Weisskirch, Draas, Henndorf, Meschendorf, Proptsdorf, Schönberg and Schweischer.

As typical examples of these fortified churches I will describe two of the principal ones, Birthälm (plates V, VI), and Tartlau (plates VII, VIII), for almost all the important features which occur in the others are to be met with in these two.

BIRTHÄLM is delightfully situated in a wooded valley ten kilometres from Scharosch bei Mediasch, which lies on the main road from Schässburg to Mediasch, that is to say in the valley of the river now known as the Tarnava Mare, its Roumanian name, in what is called the 'Weinland'. The district was settled by the Germans about 1150, and this particular group came from Luxemburg. The first church, as is general throughout Transylvania, was Romanesque in

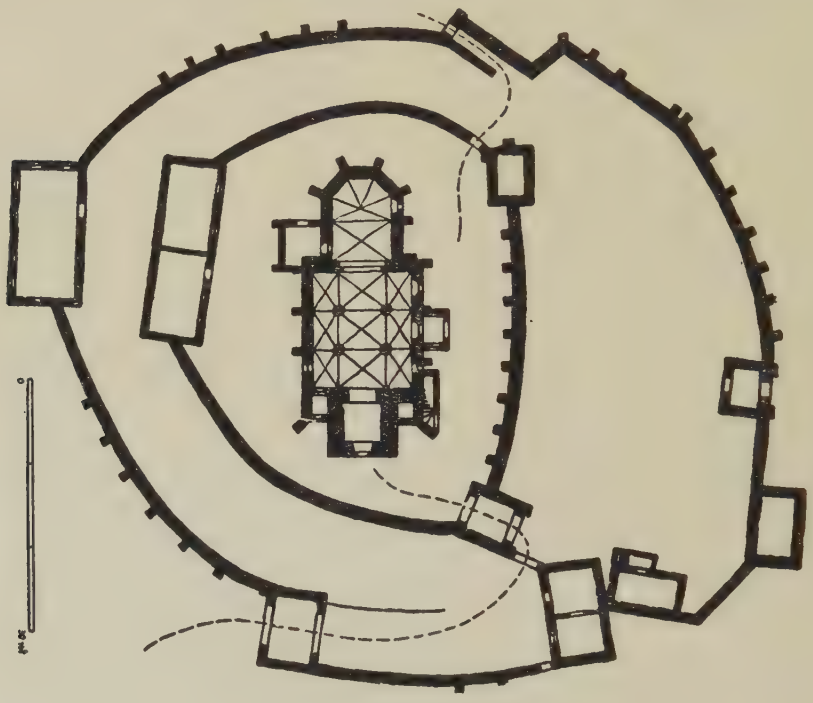


FIG. 1. TRAPPOLD

style and was probably partly defended. The present church was built in Gothic style between 1480 and 1524. The ground plan was taken from that of the upper church at Schässburg, which was completed just before. It is very imposingly situated on a hill some sixty feet high in the centre of the village.

The plan of the defences somewhat resembles that of the church at Trappold (fig. 1). It was originally surrounded with four walls, the lowest of which has disappeared to make room for the road which

now runs around the foot of the hill, though some traces of it may be seen in certain of the houses there. The other three are intact except for the fact that they were originally considerably higher and provided with loop-holes above the machicolation. The centre and the upper of the existing walls are supported on buttresses which carry arches forming wide machicolations, the space down which the pitch could be poured being as much as a foot across. The original approach to the church passed through a strong tower in the middle wall and then up a narrow passage-way between this and the innermost wall until it reached a point near the top, when it passed underneath a further tower, beyond which lay the church enclosure. In plate VI this passage-way is shown looking down from the tower in the innermost wall to the tower in the middle wall, the height of the walls and the narrowness of the passage making it exceedingly difficult for the attackers to fight their way up. In these walls there were originally five strong towers and seven bastions at strategic points, but of these only three now remain. The towers were originally defended with loop-holes and with galleries of wooden planking, which, as well as providing protection from which to shoot, formed what amounted to machicolation. Plate V shows on the right the tower at the southeast corner of the church enclosure with its wooden gallery. Around the choir runs a stone gallery pierced with loop-holes, but the main defence lay in the exceptionally strong system of walls and towers and in the height of the hill on which it stands. The original inhabitants chose their site well and then proceeded to add to its natural advantages this ingenious system of defence.

Just within the innermost wall on the hill-top to the south of the church is a large square tower, a survival of the original church, known as the ' Catholic Tower '. In the ground floor of this tower are several frescoes dating from the 15th century which still retain their original vivid colours, although they have been very badly treated one way and another. The subjects are as follows :—

Over the east window Our Lord with angels in red-gold garments and wings of the same colour. St. George in iron armour and spiked helmet with a shirt of mail under his armour. He has a cross-hilted sword in a red leather baldric decorated with gold and is attacking the dragon, holding in both hands a lance with fringed point. On the side opposite is a full-length figure of the Archangel Gabriel.

On the south wall to the left is the Annunciation and to the right the Visit of the Magi. Between them is painted a vivid green and

black cloth against which the altar originally stood. There is also an inscription, now illegible, in the new Gothic small writing of the 15th century.

On the west wall are many figures in bright coloured garments, some having red hats like cardinals, some simple white kerchiefs, to whom an angel is speaking ; a saint worshipping, Christ on the earth globe, a bishop with a crozier and a man with a raised sword.

On the north wall is a female saint in a white garment, a man beside her aiming with a bow at her heart. Over the door a curtain beneath which are the weapons of torture, cross, scourge and whip. On the other side of the door an arrow flies at a fair-haired woman in an ample cloak, before whom several persons kneel, among them a bishop, while an angel with fair curls stands in front of her to defend her from the arrow. On the vaulted roof is a large figure of Christ ; the right hand raised in blessing, the left holding the open book of the gospel. Above the door on the outside the Christ-child seated on Mary's knee is placing a crown on the head of a kneeling figure, while a king in iron armour and large mantle stands at the side, his left hand raised, his right hand swinging an elaborate battle-axe.

The coming of the Reformation to Transylvania was the work of one man, Johann Honterus, a citizen of Kronstadt, who was born in 1498. In 1553 a Lutheran bishop was appointed, having his seat at Laibach. In 1572 the third bishop appointed was the pastor of Birthälm and the seat of the bishopric was transferred there from Laibach and remained so until 1867, when it was once more moved, this time to Hermannstadt. There were 26 of these bishops at Birthälm and the majority of them were buried in the choir of the church. Of their carved tombstones seven are now to be seen in a tower to the southeast of the church, which stands to the right of the choir in plate v. Of these seven, five have been removed from the choir and two from near the church door.

The interior of the church consists of a central nave with aisles on each side, separated by three octagonal pillars, which support a finely proportioned Gothic vaulted roof. At the east end stands the choir slightly raised with a vaulted roof supported on arches which spring from corbels in the wall, there being no supporting pillars. At the east end of the choir are three lancet windows, each with three lights with good Gothic moulding. The altar-piece is a central panel with two wings, the centre of which consists of a carved wooden crucifix with figures on either side. Around it are ten panels with scenes from

the life of Our Lord and the two wings contain a further eight panels with other similar subjects. It was completed at the same time as the church. The open-work Gothic wood-carving over it is particularly fine. The choir-stalls are of carved and painted lime-wood, typical of these churches, although now many of them have disappeared, in the backs of which are inlaid panels of marqueterie. They were probably made by one of the sons of Veit Stass of Nuremburg, who lived at Mediasch. Good specimens of this style of choir-stall are to be seen in the upper church at Schässburg and at Bistritz. The pulpit is of carved stone, contemporary with the church. The door leading to the sacristy is of great interest and bears the date 1515 and the initials of the pastor. The lock is extremely complicated and is composed of thirteen bolts covering some four square feet ; the iron ornamentation on the lock and handle are perfect specimens of Gothic iron-work.

TARTLAU is a small town some 20 kilometres northeast of Kronstadt and possesses the largest of the fortified churches in Transylvania. The town stands well away from the hills in the centre of the plain of Kronstadt, the ' Burzenland ', as it is called. This was formerly lake and marshland, in fact the pastor told me that his father used to talk of how he habitually fished in the lakes near the town, which have now all disappeared. Consequently the natural defences of the place rested in the water surrounding it and not, as at Birthälm, in the height of the hill on which it stood.

Standing as it does in the plain it has been necessary to surround it with very strong, high walls. The ground-plan of the church (fig. 2) shows that the main wall surrounds the building in an almost perfect circle. This wall is very high, standing up over 40 feet, and is provided with pitch-spouts for pouring pitch on the attackers ; around it also ran a wooden gallery with loop-holes for marksmen. In it there were originally four strong towers, but of these only two remain. From this main wall juts out the main entrance to the church. The approach is very strongly guarded and access can only be gained through a narrow passage-way, which passed originally over a draw-bridge across the moat, which surrounded the entire building. The end of this passage-way debouched on to a strongly-fortified forecourt (plate VII), from which one could only reach the innermost court and the church itself through a further low passage, which could be closed by means of a heavy portcullis, which is still in position. On the left of this forecourt is a small triangular court, also strongly defended, which was known as

the ' Baker's Yard '. Against the inner face of the main wall in the church-yard, as was almost always the case, living-rooms and store-rooms have been built (plate VIII), in three tiers, and under them are cellars. Rooms have also been built around the forecourt, and in the ' Baker's Yard '. In these cellars were stored provisions enough to last through a protracted siege and the arms and ammunition were stored in the towers in the main wall. As Tartlau lies not far from the

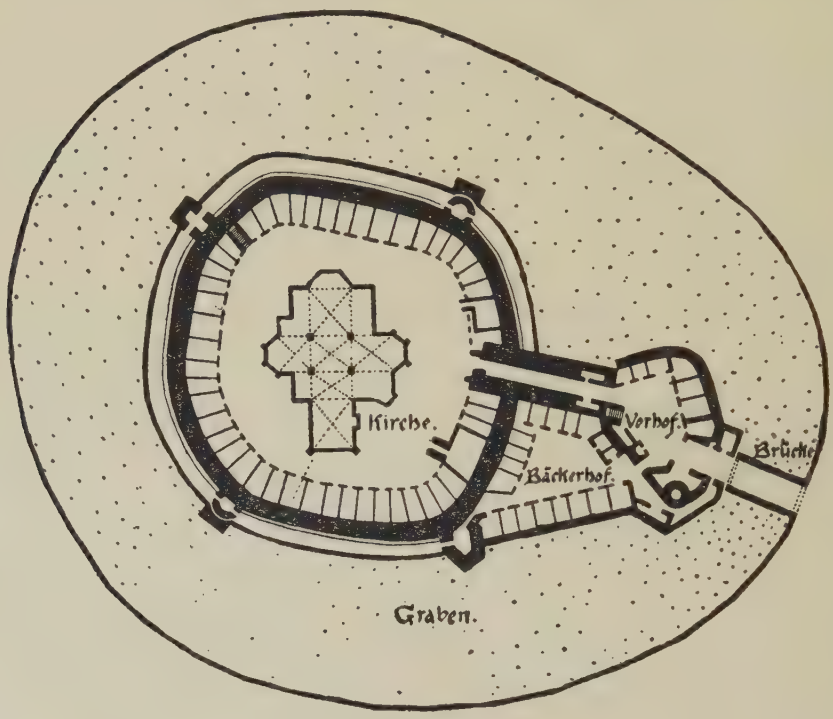



FIG. 2. TARTLAU

mouth of the pass, which leads over the Carpathians to Kronstadt, it was the scene of constant raids by the Turks, Wallachians and Moldavians. When the inhabitants were warned by their scouts of the approach of the enemy, they withdrew within their church, taking with them their cattle and what they held most precious. These they stored in the living-rooms and store-rooms allotted to them. Inside the courtyard is a well and there was also a horse-driven mill to grind the corn for the bakers to enable them to be self-supporting during

a prolonged siege. Besieged, too, it was many times, notably in 1552 by the Voivodes of Moldavia and again in 1658 by the Turks. It was once more besieged in 1704 during the Kurutzen disturbances, as was Birthälm. The fact that it has never been captured bears eloquent witness to its strength, and the stout hearts of its defenders.

There is nothing of interest in the interior of the church, which is very simple in construction and in no way comparable to the church at Birthälm.

### Notes on the principal Churches

Agnetheln (Agnita). The town lies at cross-roads in the centre of the triangle formed by Kronstadt, Schässburg and Hermannstadt. The fortifications were removed in 1892, but there is a fine church-tower with bricked-in gallery and two of the towers in the walls remain. The church is mentioned as early as 1466 when King Matthias decreed that, when a general muster of all those capable of bearing arms was called, half of the citizens of this town might remain behind to defend it, so important was its position held to be.

Almen (Alma). The choir rises above the nave and the upper part of the wall has been built out on corbels, forming wide machicolations, there being a loop-holed gallery above. The nave appears to have had no defensive works. A high wall surrounds the building in which four of the original towers still stand. It originally had loop-holes but most of them have been filled in. A gallery, too, on the inner side, has disappeared. The eastern tower in the wall is in good state and appears to have been very strong, having a wooden gallery surrounding it. The loop-holes are divided into three partitions each to enable defenders to shoot to right and left as well as straight in front without moving position.

Alzen (Altina). A single wall, now in rather a dilapidated condition, surrounds the building, but many parts have been pulled down. Some original towers in the walls still stand, but they are of no importance. The church has been disastrously restored and there are now no traces of any defence works.

Arkeden (Archita). Surrounded with a double wall which is loop-holed and defended with seven strong towers, one of which still has its bricked-in gallery. The other towers lost their galleries in the great fire of 28 August 1748, which did much damage to the building. One tower is dated 1661.

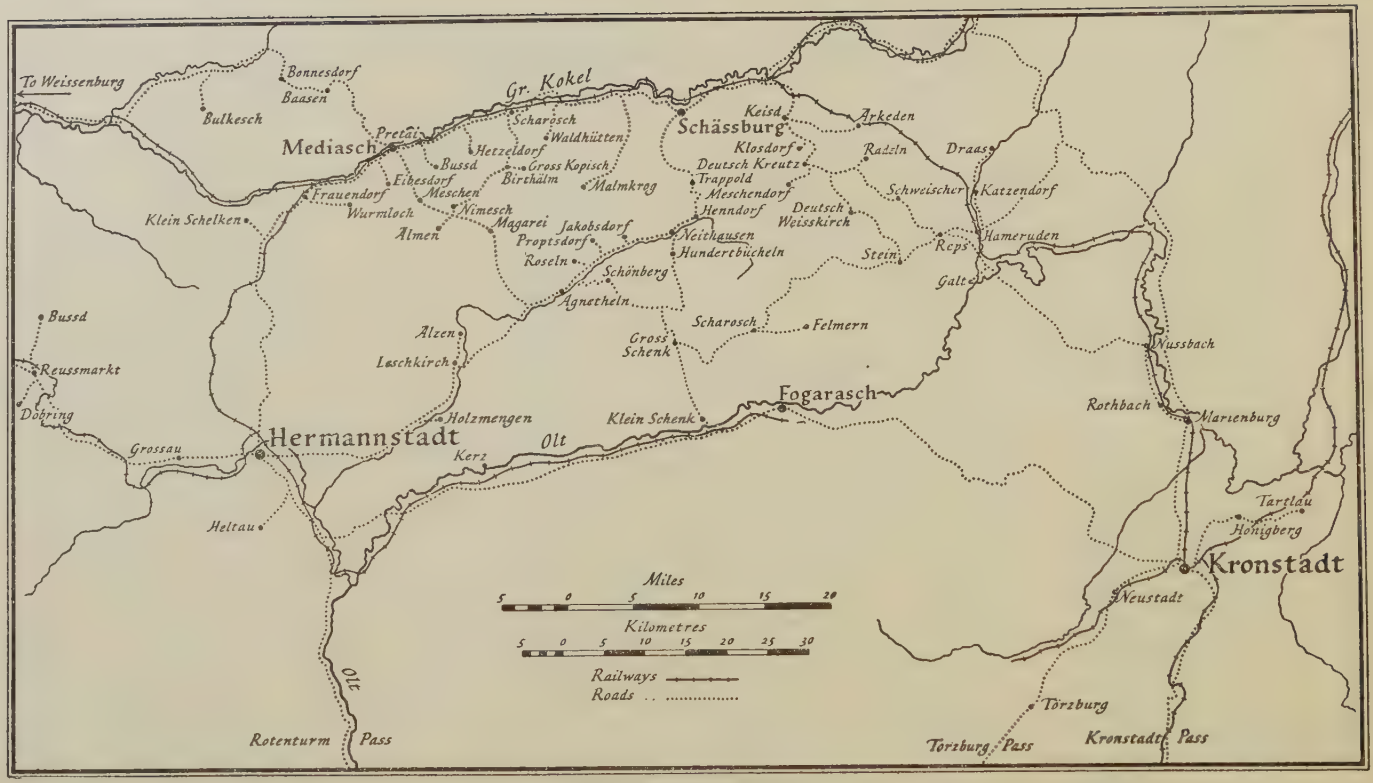



FIG. 2. TRANSYLVANIA

Baasen (Basna). The nave is quite undefended but the choir is built up into a massive tower supported by buttresses at the corners and in the centre of the sides, but these never carried machicolations, they were only for the support of the fabric. The gallery which surrounded it at the top has disappeared but there are two rows of loop-holes in the lower part of the tower. The church in its present state was completed in 1504.

Bodendorf (Bundorf). The fortified church-tower has been removed but the nave is machicolated. The choir is loop-holed and slightly lower than the nave. Below these loop-holes are spouts for pouring pitch. Built in 1519.

Bonnesdorf (Boian). The nave has no defence works but the choir has been built up into a massive tower, which is reinforced by buttresses at the corners and in the centre of the sides, as at Baasen, but in this case machicolated arches have been built between, resting on corbels. Above is a loop-holed gallery. The gate-tower in the wall is in good state. Completed in 1506.

Bulkesch (Balcaciu). The choir rises above the nave and is fortified with a wooden gallery, panelled man-high, below which it is loop-holed. The building is surrounded with a wall with small towers in it which have been much restored.

Bussd bei Mediasch (Buzd). The choir is built up in three storeys, very strong with a winding staircase in a circular turret to the side. Fortified with buttresses forming wide machicolations and each of the storeys is pierced with loop-holes. Built 1490–1495.

Bussd bei Reussmarkt (Boz). Choir and nave are of the same height and are supported by buttresses, between each pair of which are three corbels carrying a built-out gallery and forming machicolations below. A turret with a winding stair leads to this gallery.

Deutsch Kreutz (Crit). Has been restored but much of the original wall still stands with bastions, and machicolations on corbels.

Deutsch Weisskirch (Viscri). The outer wall is exceptionally strong and high and the entrance in it is covered by a strong tower, with wooden gallery, and loop-holed. There are several other towers and bastions with wooden galleries. The ground-plan is an oval, 46 yards by 36. The choir was originally machicolated but only traces now remain. The north tower bears the date 1630 and the west tower 1649, but these were added later than the rest of the fortification.

Around the inner wall are still to be seen the store-rooms and living-rooms, which were occupied in times of siege.

Dobring (Dobarea). The wall is in a very bad condition but in front of the entrance there is a small forecourt, over the entrance to which are still in place two pitch-spouts for pouring pitch on the attackers. Inside this entrance is the gateway of the inner wall. The church-tower covers the original hill watch-tower and rises in four storeys, each pierced with loop-holes. The tower was originally surrounded with a strong gallery with machicolations but the new church was built over and to the east of it in 1481. Inside can be seen, over the organ, the original corbels forming the machicolations, which are now covered by the roof of the church. In 1509 it was dismantled by Michael, Voivode of Wallachia, and was not rebuilt until 1631. Some of the original store-houses remain inside the church courtyard.

Draas (Draos). The church (plate IX) dates from very early times. The towers in the wall originally had galleries round them similar to that around the church-tower. The wall is loop-holed at intervals. Much of the first Romanesque church remains and the rounded arches are to be seen, built into the side walls. It was formerly much larger and had an aisle on either side, separated by these Romanesque arches, but it was re-modelled in the 15th century on a much smaller scale, the arches of the aisles becoming part of the outside wall. Above these arches are rounded windows each containing two semicircular lights. Under these windows are remains of early frescoes which would appear to be of some merit. The Romanesque west door is original. The Germans came to Draas in 1224 and are said to have brought with them a long double-handed sword, which is still kept in the church. The story goes that there were originally two of them, the other one being at Broos, not far from Hermannstadt, but that it disappeared in the beginning of the 16th century during one of the Turkish invasions. This one at Draas has every appearance of being authentic. The choir is surrounded with a bricked-in gallery, forming machicolations below.

Eibesdorf (Ibisdorful Sasesc). The church is defended on one side (plate III) by a stream, and opposite to the crossing of the stream is a round bastion, the only round one which I have seen in these churches, provided with loop-holes and pitch-spouts. The walls are in a state of decay but the choir is built up high and strongly loop-holed and the church-tower is surrounded with a wooden gallery.

There is good Gothic work in the interior and an aumbry dated 1421. A small staircase leads up in the thickness of the wall to the gallery above. Some of the store-rooms are still in place.

FELMERN (FELMER). Originally built in the Romanesque style of which traces remain. Portions of the original wall and some of the towers are intact. The galleries of the towers have been removed and the roofs now rest on the walls themselves. There are no traces of fortifications.

FRAUENDORF (FRÂUA). Begun in 1330; the fortifications were strengthened at the end of the 15th century. The choir was heightened and loop-holed and a bricked-in gallery was built round the church-tower. At this time a high wall with towers in it was built round the building, which is in an almost perfect condition. The west door is a fine specimen of Transylvanian Gothic work. The name is derived from the 'Frauen' = nuns, since there was once a nunnery there.

GALT (UNGRA). One of the oldest of the Transylvanian churches and a certain amount of Romanesque architecture still survives, notably the arches, which formerly cut off the north aisle but now are built into the outside wall, as at Draas. The church was captured by the Turks in 1658. It was rebuilt in 1702. There is a circular apse of basilican type at the back of the altar at the east end.

GROSSAU (CHRISTIAN NEAR SIBIU). The village lies close to Hermannstadt near the mouth of the Rotenturm Pass through the Carpathians by way of the Olt Valley and a favourite one for the Turks to take. Its defences were strong—a surrounding wall, which was double with towers and bastions, and formerly had a loop-holed gallery and was machicolated. The galleries have been removed from the remaining walls but it is obvious that they were strong. The date for the original church would be about the middle of the 12th century. This church was burnt by the Turks in 1493, and the present church built in 1498. Grossau appears to have been a Christian settlement even before the advent of the Germans and its original name was 'Insula Christiana'.

GROSS KOPISCH (COPSA MARE). The church was originally Romanesque, but was fortified towards the end of the 15th century, when the choir was built up high with its characteristic machicolated arches and stone, loop-holed gallery. There is only a single wall around it.

Gross Schenk (Cincul Mare). The town is at an important centre in the German country not far from Agnetheln, and the church was originally Romanesque. It was fortified and transformed into Gothic in 1522, when it was surrounded with a double wall with several towers, but of these nothing remains. The church-tower is massive and appears to have been built over the remains of the former church. The name is derived from Schink, a name found in Luxemburg.

Hameruden (Homorod). Built between two massive towers, the easternmost of which stands over a basilican chapel of the earlier church, dating from the 13th century, as can be seen from the arching of the roof, which has been cut into by the wall of the present church. Consequently the altar stands on the south side. There are some good frescoes of possibly 14th century, but they are sadly damaged. The chapel is rounded off with a semicircular apse with semicircular roofing. Over it was built the tower by adding some six feet of building as a casing, in the depth of which, through one of the original windows, a staircase winds up to the upper storeys. The other window in the apse has been blocked in but can clearly be traced. This superimposition of a tower over an earlier chapel or portion of the original church is often to be found and is in fact almost always the case when there is a very wide church-tower. Notable examples are Scharosch bei Gross Schenk, Neithausen, Roseln and Radeln. The defences lay in these two strong towers with their wooden galleries and in the double wall, though the outer one has almost disappeared. There are two towers and a bastion in the wall in fair condition. This wall was originally loop-holed and was surrounded on the inner side with a wooden gallery (plate x).

Heltau (Cisnadie). Originally built in the 12th century, and was Romanesque. The arches can still be seen. Destroyed by the Turks in 1493 but afterwards rebuilt in Gothic style in the form of a cross, high superstructures, like towers, being built for defence over the choir and the north and south entrances. It was at the same time surrounded with a triple wall with pitch-spouts and between the inner and middle of them was a moat, which was only filled in in 1880. Inside the gateway is a small forecourt very strongly defended. Of the many towers and bastions which formerly stood in the walls only three remain, one of which was originally a chapel but has now been converted into a bacon store. This is a common practice, and use is made

of these towers on account of their coolness and even temperature. Around the inner side of the wall, as at Hameruden, were store-rooms and living-rooms supported on brick arches, under which were cellars, but these have now been removed. The name was brought by the inhabitants from Germany. Sixteen gilt vessels from this church are now in the Brukenthal Museum at Hermannstadt.

HENNDORF (HENDORF). The choir and the nave, although of differing heights, are surrounded by a completely filled in wooden gallery with loop-holes cut in it. Not many of these churches have this type of gallery. The protecting wall was originally very high, so high in fact that the windows could not be seen from the outside. Only bits of it now remain. In the nave is a deep well which gives very good water. In almost all cases there is a well in the courtyard, but it is rare to find one in the church itself. Completed in its fortified state in 1465, but there must have been an older church. The name is derived from 'Hain' = grove, meaning the village in the grove. During the 17th century the Turks captured it and pulled down the church-tower.

HETZELDORF (ATEL). There are good trefoil windows in the church-tower, which are now unfortunately blocked up. When the church was fortified another storey was added to this tower and a panelled gallery built under the roof. The choir, too, originally had a gallery but this has been removed. Some of the towers in the wall are still standing, but the wall itself is considerably lower than formerly.

HOLZMENGEN (HOZMAN). There are traces of the original Romanesque church, and the doorway of the west tower is pure Romanesque. This tower was not enlarged when the church was further fortified, but a wooden gallery was added, panelled right up to the top with loop-holes cut in it. The original wall still stands with towers in it, but these have all lost their galleries with the exception of the gate-tower, which is machicolated, and has a portcullis of iron-shod oak.

HONIGBERG (HERMAN). Surrounded with a very strong wall 40 feet high and provided with pitch-spouts. There are 7 strong towers in a good state of preservation, but the galleries have been removed and the roofs lowered on to the walls themselves. The main tower originally had a wooden gallery, but it was destroyed in 1794. As at Tartlau a broad moat ran round the building outside the wall, but this has now been filled in. A drawbridge crossed the moat forming a pillared passage-way as at Tartlau and at the end of this passage was

a dark, vaulted corridor, which could be closed by means of a portcullis, still in position. This corridor leads into the courtyard of the church, where there are several living-rooms and store-rooms. Further rooms were built against the church itself, between the buttresses. In the courtyard is a well and there were previously a bakery and a horse-driven mill. The church is said to have been begun during the 13th century and was burnt down in 1593. It was rebuilt in 1595. It sustained a prolonged siege by Gabriel Bathory in 1612 and again by the Turks in 1658. Charles XII of Sweden visited it while in this part of Europe and took such a fancy to it that he gave the inhabitants money to build a new altar.

HUNDERTBÜCHELN (HUNDRUBECHIU). The building is very narrow and is wedged between two high towers. The westernmost of these still has its wooden gallery panelled right up to the top with loop-holes cut in it, as at Henndorf.

JAKOBSDORF BEI AGNETHELN (JACOBENI). As at Hameruden, the main tower has been built over a portion of the former church. It is very strong and heavily machicolated and is joined to the square nave on the west side. Choir and nave are both surrounded with arches, which bear a loop-holed stone gallery and form wide machicolations, and the north wall of the choir is joined to a further tower, which has a loop-holed wooden gallery. Surrounded with a wall in a fair state of preservation and in it one tower with its gallery bricked-in man-high.

KATZENDORF (CATA). The double wall is in good condition and in it are three towers. One of them has a wooden gallery, one is bricked-in and the third, which rises over the original entrance in the inner wall, had a stone gallery, but now only the corbels remain.

KEISD (SASCHIZ). A good specimen of type Ia, with the surrounding arches and machicolation. It was built between 1493 and 1496. There is now no trace of the wall left. In front of the church stands the bell-tower, which stood within the original wall. The upper structure of the old tower was burnt down in 1714 and was rebuilt in 1718 as an exact copy of the clock-tower at Schässburg.

KLEIN SCHELKEN (SEICA MICA). The church has some peculiar features. Originally surrounded with a double wall with several towers in it but now only three remain. Around this wall on the inner side ran a covered gallery resting on stone arches. The choir rises high above the nave (plate II). It is machicolated by means of

corbels, which jut out from the wall and bear above them the usual stone loop-holed gallery, there being further loop-holes between the buttresses which surround it. The tower which rises over the west door has a wooden panelled gallery, and outbuildings have been built against it on the north and south sides, which, too, are loop-holed and rise above the height of the nave, which is not fortified in any way. Between this tower and the new bell-tower, which stands to the west of it, lies a small courtyard surrounded with a very high wall, which has a gallery running round the inside borne on stout buttresses and over the small doorway leading into it is a pitch-spout. This little courtyard was the last place of defence for the inhabitants, and, as the walls are very thick and strong, was of great strength. On the south wall of it is a small watch-tower facing south with a bricked-in gallery. The church was built towards the end of the 14th and fortified early in the 15th century.

KLEIN SCHENK (CINCSOR). A good specimen of type III, with a wooden gallery (plate IV). It is surrounded with two walls in which are six large towers and two smaller ones, all of which are provided with bricked-in galleries, in a splendid state of preservation. The entrance to the outer wall is on the south side and over the doorway is a pitch-spout. The church is defended by a bricked-in gallery, which runs round the choir, and the church-tower has a similar one. Within the walls is a well and there was formerly a mill. It was built in 1421.

KLOSDORF (CLOASTERF). Built in 1524. The nave and choir are the same height, both being surrounded with buttresses on which rest arches making wide machicolations. The usual loop-holed stone gallery surmounts the whole. A single wall of some height surrounds the whole building, but it is now devoid of towers. The old church-tower has been pulled down and a modern one built in its place. There is a well in the nave.

LESCHKIRCH (NOCHRICH). One of the earliest settlements of the Germans, but the church has been so renovated that it no longer contains anything of interest. Four small towers, which originally stood at the corners of the wall, are still standing.

MAGAREI (MAGAREI). On a fairly high hill and surrounded with a single wall, in which one slender tower still stands with bricked-in gallery. There are a few bastions, which jut out from the wall. On the west side, that is the side facing up the hill, the wall is provided with

pitch-spouts. The church itself has no defence works and in fact can hardly be seen above the church wall.

Malmkrog (Malancrav). The wall has been cut down to a negligible height and there are no towers now standing in it. The church-tower rises to a considerable height and has a wooden gallery. The interest of the church lies in the frescoes. The whole of the choir (plate XII), including the roof, is painted with scenes from the life of Our Lord and of the four evangelists. They give a vivid impression of the artist's conception of the bible story and appear to be of the same date as the church, that is to say the 16th century. The north wall is covered with three lines of paintings of biblical scenes. The altar piece is a good specimen of 16th century painting and has two wings. It is unfortunately rather badly preserved. There is a charming little Gothic aumbry with a finely-worked iron grill of the same date as the church and above it is a very interesting stone crucifix, only some 18 inches in height, with a figure on either side, the whole being surmounted with Gothic canopy (on the left of plate XII).

Meschen (Mosna). One of the best-known of the Transylvanian churches, its style being pure Gothic. There was an earlier church here but it was pulled down when the present one was built *c.* 1490–1500 by a certain Andreas Lapida, who had designed the church at Hermannstadt. The fortifications were at least in part constructed later, as can be seen from the date 1580 on one of the towers. The choir is machicolated in the usual way by arches resting on buttresses with a stone loop-holed gallery above. Strong towers rise over the north and south entrances provided with stone machicolation and a wooden gallery above. The defence wall, which is interrupted by four strong towers, is double in parts and has in addition two small turrets on the wall itself. The northern side of it consists of the north wall of the original church, the other portions of which were removed when the present one was built. On the inner side of the surrounding wall are store-rooms and living-rooms in two tiers and in addition against the southwest wall. These latter are more finished and were probably used as a dwelling for the priest and for schools in time of danger. The interior is very fine with splendid Gothic vaulting.

Meschendorf (Mesindorf). Built of golden sandstone and surrounded with a double wall in which are several strong towers. The one at the west end of the wall near the original entrance is particularly

SCHAROSCH BEI GROSS SCHENK
Showing group_II, type Ia, with machicolation round choir and nave
Plates I–XII, *ph.* E. G. Sebastian

*facing p.* 320

KLEIN SCHELKEN

Showing group II, type Ib, with the variation of corbels forming the machicolation

EIBESDORF

Showing group II, type II. No surrounding arches but choir built-up and loop-holed

KLEIN SCHENK

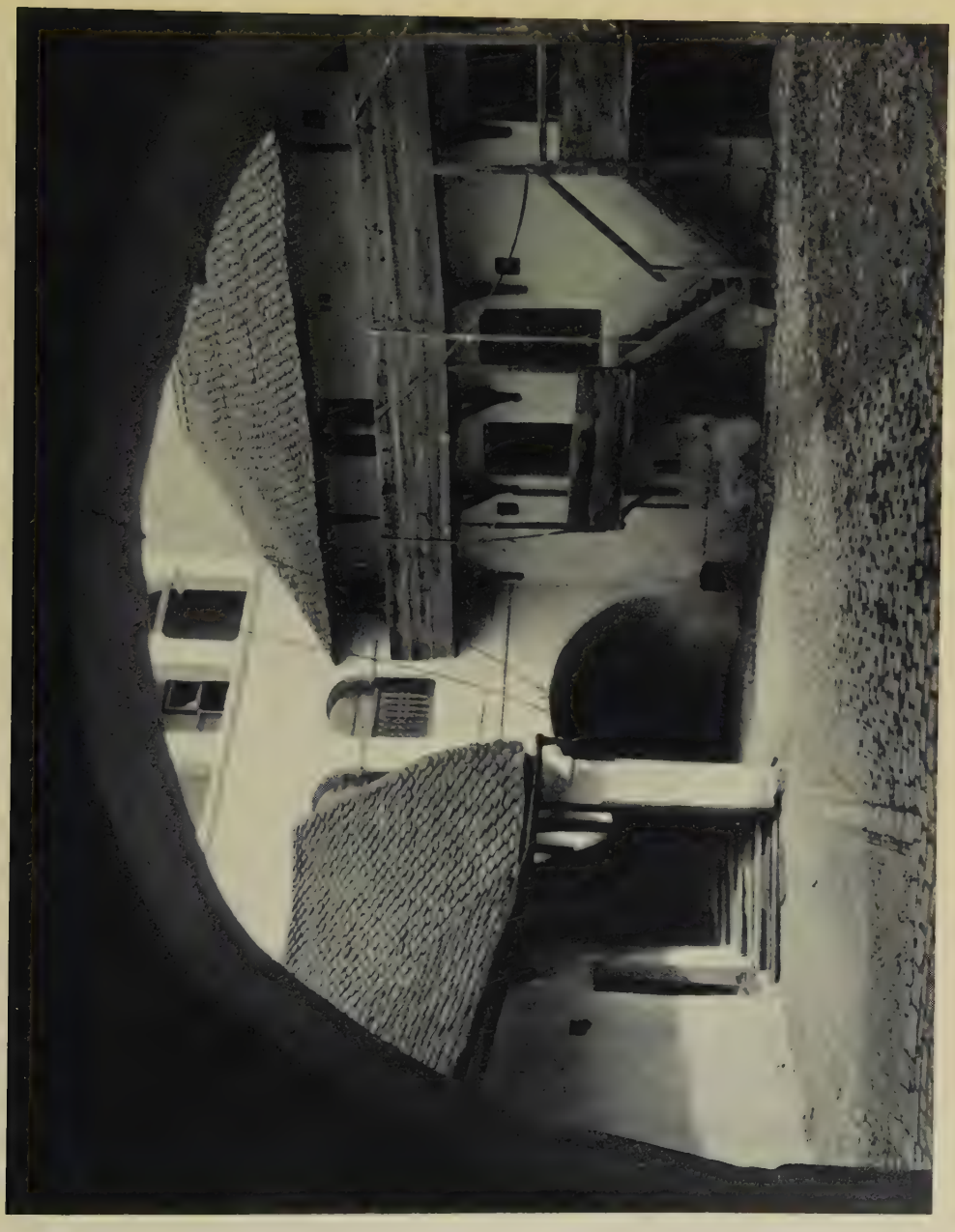
Showing group II, type III. Choir and nave surrounded by bricked-in gallery, as also the towers

PLATE V

BIRTHÄLM : GENERAL VIEW

BIRTHÄLM
Passage-way leading between the walls to church above

PLATE VII



TARTLAU

Forecourt, showing passage-way to church and store-rooms

TARTLAU
Inner court with store-rooms and living-rooms in three tiers with cellars underneath

PLATE IX

DRAAS GENERAL VIEW

MALMKROG
Showing frescoes and aumbry

fine and has a bricked-in gallery. The church itself is surrounded under the roof with a wooden gallery, as also is the church-tower.

NEITHAUSEN (NETUS). There are the remains of a wall, cut very low. The choir and the nave were probably loop-holed with a gallery. The strong tower has been built over a portion of the original church, for at the back of the altar on the east end there is a small chapel with Gothic vaulting, which is no longer in use and which is obviously of much earlier date than the present church.

NEUSTADT BEI KRONSTADT (CRISTIAN NEAR BRASOV). This is one of the churches in the Burzenland, or the plain round Kronstadt, and consequently had a very strong wall, of which much still remains, and in which there are still nine defence towers standing. The church was entirely rebuilt in the 19th century. There is a small courtyard in front of the church which was originally defended. The wall is provided with pitch-spouts and some of them have been splayed out so as to enable them to be used for shooting to either side. Around the inner side of the wall is the usual gallery for the defenders. Facing the church on the inside of the walls were originally store-rooms and living-rooms, but they were removed in 1899. They were in two tiers and measured about 10 square yards.

NIMESCH (NEMSA). The defences have now all been done away with but the choir of the church is filled with a very interesting collection of frescoes of the 16th century, mostly of full-length saints. There are probably many more than are visible now as the plaster has not been removed but has only worn away in places.

NUSSBACH (MAERUS). The church lies in the Burzenland and consequently relies for its defence on its walls. There remains a single wall which is high and has alternate pitch-spouts and loop-holes in it. The church-tower has been newly-built and is of no interest. Part of the wall has been pulled down.

PRETAI (BRATEIU). The choir rises above the nave and is machicolated in the usual way with arches resting on buttresses. A strong bell-tower rises to the west of the church with a wooden panelled gallery. There is a good surrounding wall and the gate-tower is still standing and well-preserved. The west door is a good specimen of Transylvanian Gothic architecture.

PROPTSDORF (PROSTEA). The little church has great charm. Both the choir and the nave are of the same height and are surrounded

with a bricked-in gallery. At the west end rises the church-tower, which has a wooden gallery. In the wall which surrounds it one tower still stands over the entrance.

Radeln (Roades). The church stands on a considerable hill and is surrounded with a wall, double in parts, which was loop-holed and originally had five towers—now only four remain, one dated 1644. The nave is machicolated in the usual way with arches resting on buttresses with a stone gallery above. On the west side of the church rises a massive tower, which has been built over an earlier Gothic chapel with good vaulted roof and the remains of a good doorway, which is now sadly misused. Unfortunately the outside of this doorway has been blocked up with bricks. This tower is surrounded with a complete wooden gallery with loop-holes cut in it. In the choir is a good altar-piece with side wings dated 1614 and 1648. The date 1526 over the sacristy door shows the completion of the church as it now stands.

Reussmarkt (Mercurea). An important centre between Mühlbach and Hermannstadt. There is very little left of the church defences, the wall being still more or less intact and a small tower on the west end of the church, which has a wooden gallery.

Rothbach (Rotbav). Lies in the Burzenland, or plain of Kronstadt, and consequently relies for its defence on its walls. There remains a single wall, which is high and has alternate pitch-spouts and loop-holes in it. The tower has been built over an earlier Romanesque chapel and at the top it has been built out on corbels forming machicolations. The gallery above has now disappeared. The east end dates from the original church and is basilican in shape.

Roseln (Ruja). The choir is machicolated by means of arches borne on buttresses, but the nave is undefended. On the west side rises a very strong tower, which has been built over the remains of a Romanesque building and is surrounded with a complete wooden gallery in which loop-holes have been cut. Nothing now remains of the original defensive wall.

Scharosch bei Gross Schenk (Soars). A perfect specimen of type Ia (plate I). Choir and nave are both machicolated and there is a fine tower at the west end, which has been built over a vaulted chamber of the original church, having a Gothic doorway leading into the church. Built in 1486 and renovated in 1809. There are now no remains of its walls and towers, the last portions of which were removed a few years ago.

Scharosch bei Mediasch (Sarosul Sas). Originally surrounded with a single wall provided with loop-holes and pitch-spouts. Some of the towers still remain in a somewhat dilapidated condition but the gate-tower is fairly well preserved. Good Gothic windows in the choir and some good vaulting.

Schönberg (Dealul Frumos). An interesting compact little church which was fortified in 1522. The three-sided choir was pulled down and a strong tower built over a square choir, which, as well as the tower on the west of the church, was machicolated and provided with a bricked-in gallery. The nave, which lies between these two towers, is low and has no defensive works but is protected as high as the roof by the church wall, which is very high. All these features can be seen in fig. 3. The galleries of the towers, and the gallery which runs round the wall, are of the type given in fig. 4, which shows the construction and is common to almost all the galleries in these churches. The original wall was strengthened later by the addition of a second wall on the north and south sides as shown in the plan. In these two walls are many towers still in a splendid state of preservation. Above the entrance to the church enclosure are pitch-spouts and there are others in the bastions on the walls. Around the inside of the walls are rooms (shown in plate XI).

Schweischer (Fiseriu). Almost entirely renovated with disastrous results, there being practically nothing left of the fortifications, though a book on the subject quotes it as one of the most interesting of these churches. It was originally built about the middle of the 15th century but was captured and dismantled by the Turks. In 1605 it was once again fortified. The name is a Luxemburg place-name.

Stein (Stena). The single wall which surrounds it still stands except at the southeast corner, where it has been removed to make room for school buildings. The wall is square, which is rather unusual, with towers at the four corners and a small bastion in the centre of the north side. The choir has been machicolated in the usual way with arches resting on buttresses with a stone loop-holed gallery above. The vaulting in the interior is good. The nave bears the date 1587, the completion of the church. There are good carved choir stalls in the style to be seen at Birthälm.

Tarteln (Toarcla). The wall is very dilapidated and has been lowered to a negligible height but the tower is strongly built and covers the remains of an earlier church, the west door being in pure

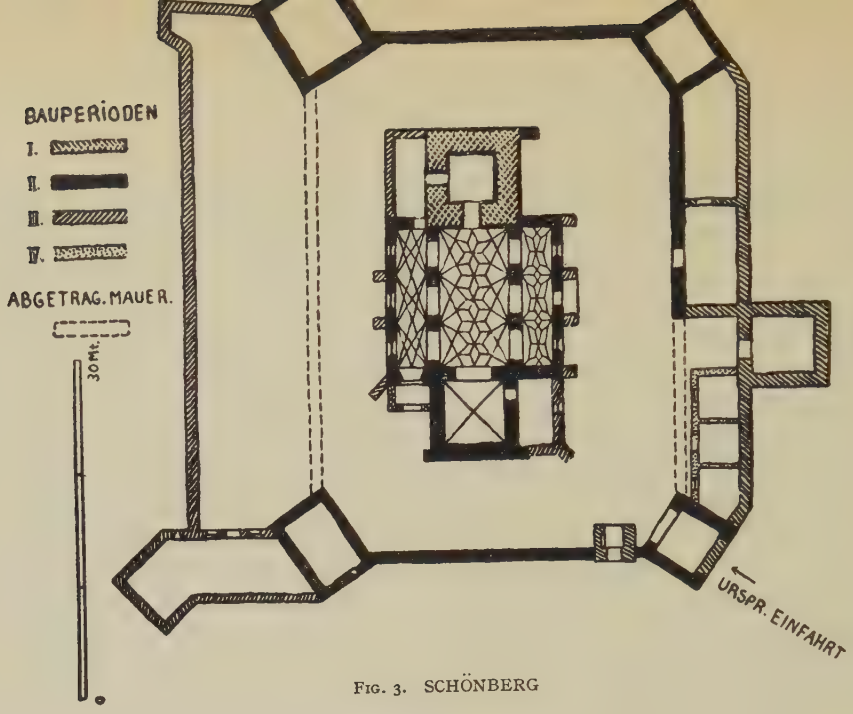



Fig. 3. SCHÖNBERG

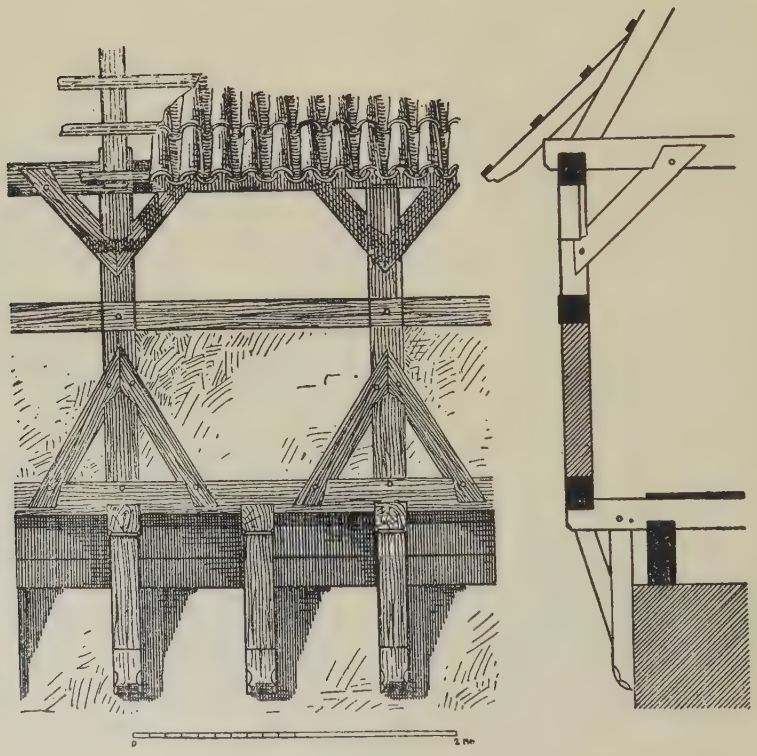


Fig. 4. SCHÖNBERG : detail of gallery

Romanesque style. It is surrounded with a wooden gallery but the rest of the church shows no defence works. The east end is basilican in shape and dates from the original church.

TRAPPOLD (TRAPOLD). The church stands in a commanding position on the summit of a hill in the centre of the village. As can be seen from the plan (fig. 1), the walls are very strong and are further strengthened by several towers. This wall is double all round and the approach to the church resembles that at Birthälm, as shown on the plan, entering on the west side under a strong tower, then winding up the hill until it reaches the second gateway, where it bends left under a further tower of which the gateway is low. The space between the two walls is steep, but around the inside of the inner wall were store-rooms and living-rooms. The choir of the church itself is machicolated in the usual way with arches resting on buttresses having a stone loop-holed gallery above. The nave has loop-holes pierced close under the roof but is not machicolated. At the west end rises a massive tower, which has been built over the remains of the original church. It has a wooden gallery, which is in a good state of preservation. The church as it stands today was built in the second decade of the 16th century and further fortifications were added to the walls in 1638.

WALDHÜTTEN (VALCHID). Surrounded with a wall with three main towers. Over the entrance is a small tower with a pitch-spout, which bears in old German the appropriate text, 'Enter ye the narrow gate', etc. The tower in the west side of the wall has a wooden gallery and is known as the 'Bacon Tower', since the village bacon was stored here as at Neithausen. The church itself has no defences and the earthquake in 1916 brought down one of the towers in the wall. It has a good Gothic west door and the vaulting in the choir is in the same style.

WURMLOCH (VORUMLOCH). A very interesting and quite original church containing a combination of almost all the features found in these fortifications. Originally it was Romanesque in style but was altered to Gothic when it was fortified at the beginning of the 16th century, the fortifications being completed in 1526. A high wall with several towers surrounds the church, but it has now been considerably lowered and all the towers removed. The Romanesque west tower was defended by the addition of brick arches and a projecting gallery. In this respect it is unique, for in the case of the other churches, which have retained portions of the original structures, the new tower has

been built complete around the old one, here on the other hand the tower has been left and only the buttresses added. The choir is built up to a great height—in fact almost as high as the west tower—and is machicolated by means of brick buttresses, which support the arches above ; in addition it is provided with loop-holes for marksmen. The whole intervening nave is surrounded with the usual machicolation formed by arches resting on buttresses with a stone loop-holed gallery above. Tower-like erections rise above the north and south entrances to the church, which are machicolated and loop-holed. They could be closed by means of portcullises, that over the north entrance being still in place. The interior of the church has very fine Gothic vaulting and is one of the most beautiful I have seen in Transylvania. The original store-rooms and living-rooms still surround the wall on the inner side.

### Bibliographical Note

The only articles in English which describe these churches are by Sir James Berry, F.S.A. He read a paper before the Society of Antiquaries of London on 3 April 1919 entitled ' Fortified churches of Southern Transylvania ', which was published in the Society's *Proceedings*, series 2, xxxi, 165–76, with illustrations. Another paper, read before the Royal Geographical Society on 13 January 1919, on ' Ancient Dacia and Modern Roumania ', is more general but refers incidentally to the fortified churches. It is printed in the *Geographical Journal*, liii, 129–52.

The following works by German writers refer to the churches :—

Dr Fr. Muller, *Die Verteidigungskirchen in Siebenbürgen. Wien*, 1857.

G. D. Teutsch, *Geschichte der Siebenbürger Sachsen. Hermannstadt*, 1899.

O. Piper, *Burgenkunde. München*, 1905.

Emil Sigerus, *Siebenbürgisch-Sächsische Kirchenburgen. Hermannstadt*, 1923.

L. Eber, *Siebenbürgisch-Sächsische Kirchenburgen, Ungarische Rundschau. Leipzig*, 1912.

J. M. Salzer, *Birthälm in Siebenbürgen. Wien*, 1881.

On the map reproduced as fig. 1, the spellings conform with those of the R.G.S. Committee. On the other (fig. 2) they do not, but agree with the spellings in the text.—Editor.

# Ancient Agriculture

by G. W. B. Huntingford

IN the first volume of Antiquity appear two papers, one by Dr R. C. C. Clay, dealing with the formation of lynchets[1]; the other, by Dr E. Cecil Curwen, containing a survey of prehistoric agriculture in Britain.[2] These papers, which are of considerable interest to the farmer as well as to the archaeologist, have suggested the following remarks, which I was unable to put on paper before as some of my books were in England.

It may be as well to note first of all the statements on which this paper will comment. Dr Curwen says that Early Iron Age and Romano-British ploughs had ploughshares consisting of a plain metal point fitted to the share-beam—such a plough merely scratches a groove (p. 268); lynchets were not formed intentionally (p. 273); a plough described by Pliny which turned a furrow did away with the need of cross-ploughing (p. 280); manuring is implied by rectangular fields with lynchets, and no visible evidence of two- or three-field rotation of crops (p. 286). In Dr Clay's paper, lynchets are defined as ploughed ground of which the natural slope has been altered by ploughing, which alteration was effected by ploughing the lower furrow only, bringing the plough back idle. This mode of ploughing flattened the slope, a slope being unsuitable for growing corn in a damp climate—the climate of Britain being damper in prehistoric times than it is now. (Pp. 57–59).

## 1. The Plough

The essential feature of the plough is that it turns a furrow by inverting the soil, whereas the cultivator or horse-hoe for working after the crop is sown merely stirs the soil without inverting it. Dr Curwen describes Early Iron Age and Romano-British ploughshares as consisting of a simple metal point[3] which, he thinks, merely scratched a groove in the soil (pp. 268, 280). To this failure to turn over the soil he considers that we are to ascribe the need for cross-ploughing

[1] 'Some Prehistoric Ways', Antiquity, 1927, I, 54–65.
[2] 'Prehistoric Agriculture in Britain', Ib., I, 261–89.
[3] Our 'bar-point' share.

advocated by Roman agricultural writers.[4] This, as I shall endeavour to show, is not so. Further, I believe Dr Curwen to be mistaken in his idea of the ancient plough ; for, among other things, practical experience has shown me that no amount of cultivating, *i.e.* stirring the soil without inverting it, will produce a lynchet or terrace.

Till 1760, practically the whole of the plough was universally made of wood, and there is reason to believe that the shape of the plough changed but little during centuries of use.[5] The most detailed account we possess of a Roman plough is Vergil's, which runs as follows :—

Continuo in silvis magna vi flexa domatur
In burim, et curvi formam accipit ulmus aratri.
Huic ab stirpe pedes temo protentus in octo,
Binae aures, duplici aptantur dentalia dorso.
Caeditur et tilia ante iugo levis, altaque fagus,
Stivaque, quae currus a tergo torqueat imos :
Et suspensa focis explorat robora fumus.

[In the first place, an elm is bent forcibly in the woods to the shape of a plough-body (buris), and takes the form of the crooked plough. From the base of this extends the beam (temo) for eight feet, and joined to it are two mould-boards (aures) and slades (dentalia) with double back. Beforehand, too, is cut the light lime for the yoke, and the tall beach for the stilt (stiva), which turns the bottom of the fore-carriage (currus)[6] from behind : the wood is hung in the chimney to be seasoned by the smoke].[7]

To illustrate this plough, I append tracings from Martyn[8] of two Italian ploughs in use in the 18th century, with another drawing of an old plough formerly used in Sussex. (Figs. 1, 2, 3).

Now, as regards the work done by the Roman plough, we have Vergil's express statement that

Pingue solum primis extemplo a mensibus anni
Fortes invertant tauri, glaebasque iacentis
Pulverulenta coquat maturis solibus aestas.[9]

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[4] e.g. Vergil ; Varro, R.R. I, XXIX, 2 ; and cf. Festus, s.v. Offringi, p. 523 (ed. Dacier, Valpy's ed., London, 1826).

[5] Fream, *Elements of Agriculture*, ed. 10, p. 47. Fream is also mistaken, I think, in supposing that the old ploughs did not invert the soil.

[6] I understand ' currus ' as a wheeled forecarriage on the strength of Servius' comment. See Conington in loc ; see also Pliny, XVIII, §18, 48.

[7] Verg., Georg., I, 169–175.

[8] ' The Georgicks of Virgil ', by John Martyn, F.R.S., ed. 5 (Oxford 1827), p. 40. Figs. 1, 2, 3.

[9] Verg., Georg., I, 64.

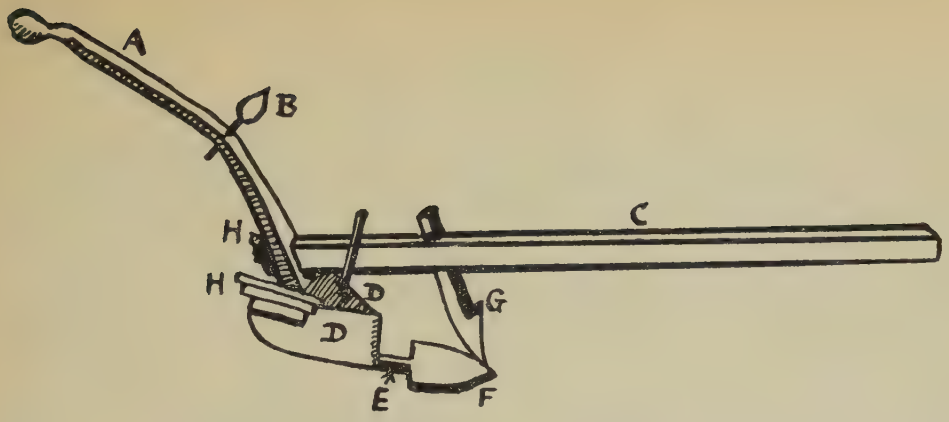


FIG. 1. EIGHTEENTH-CENTURY ITALIAN PLOUGH. (Martyn)

A, Buris. B, Stiva. C, Temo. D, Aures. E, Dentale. F, Vomer. G, Culter. H, Tabellae

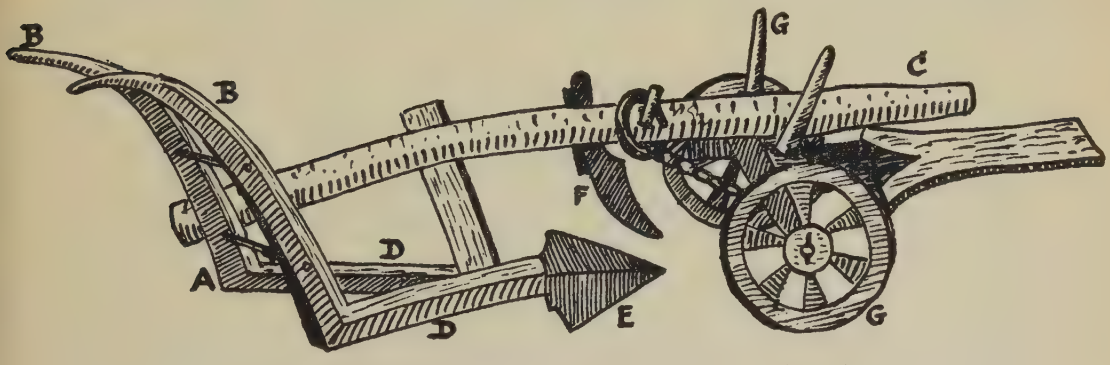


FIG. 2. EIGHTEENTH-CENTURY MANTUAN PLOUGH. (Martyn)

A, Buris. B, Stiva. C, Temo. D, Aures and dentale. E, Vomer. F, Culter. G, Currus

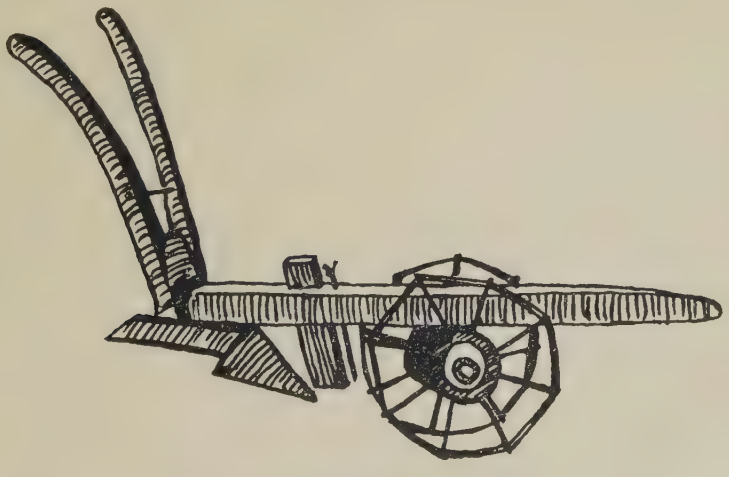

FIG. 3. OLD SUSSEX PLOUGH. (*Reliquary*)

(Right from the beginning of the year the strong bullocks should turn over the rich soil, that dusty summer with its hot suns may bake the clods as they lie [upturned]). We learn from other sources something of the nature of ploughed furrows. ' Qua aratrum vomere lacunam striam fecit, sulcus vocatur. Quod est inter duos sulcos elata terra dicitur porca, quod ea seges frumentum porricit '.[10] [Where the plough makes with its share a hollow furrow, the result is called sulcus (furrow). The raised earth between two furrows is called porca (ridge), because there the corn produces its crop]. And again, ' Porca est inter duos sulcos terra eminens ',[11] (porca is the raised ground between two furrows); which is further defined by Columella, ' Liras rustici vocant easdem porcas cum sic aratum est ut inter duos latius distantes sulcos

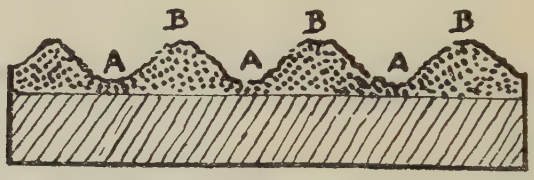


Fig. 4. DIAGRAM OF FURROWS. AA, Sulcus ; BB, Porcae

medius cumulus siccam sedem frumentis praebeat ',[12] (the country people call these same ' porcae ' lirae when the land is so ploughed that a heap of earth mid-way between two wide furrows offers a dry bed for the crop). This result (fig. 4), can only be obtained by using a plough which turns a furrow. Such a seed-bed was produced, so Varro tells us, ' cum tabellis additis ad vomerem ',[13] (with boards added to the share), *i.e.* not to the actual share, but to the mould-boards proper (fig. 1). The use of a coulter, too, even if not with every plough, implies the inversion of the soil, particularly as Pliny says ' culter vocatur, praedensam, priusquam proscindatur, terram secans, futurisque sulcis vestigia praescribens incisuris, quas resupinus[14] in

[10] Varro, R.R., I, 29, §3. Ed. Goetz (Teubner).

[11] Festus, p. 319, s.v. Imporcitor. The porcae described above must not be confused with others 'aquae derivandae gratia' (ib. p. 611), which were open drains.

[12] R.R. II, 4, 8.

[13] R.R. I, 29, §2.

[14] Taking 'resupinus' proleptically.

arando mordeat vomer',[15] (that which cuts the heavy ground before the first ploughing is called a coulter, marking out a line for the future furrows by cutting into the ground, into which cutting the share penetrates turned back in ploughing). There is no other reasonable explanation of the term porca than that shown in fig. 4; and the statements of Varro, Vergil, Columella, Pliny, and Festus sufficiently indicate that the ground was actually turned over, not merely scratched. The only alternative is to suppose that every second furrow was left unploughed, which is absurd, and could not possibly have prompted Varro's etymology of porca, 'quod ea seges frumentum porricit';[16] nor does this sanction White and Riddle's definition of porca as a 'balk'.

Dr Curwen considers (p. 280) that a plough which turns a furrow does away with the need for cross-ploughing. But, apart from the fact that the Roman plough did turn a furrow, we need not suppose that the terms proscindere=first ploughing, offringere=second or cross-ploughing ('to plough against'), and lirare=third ploughing (after or at the same time as sowing), need be taken at any period of Roman agriculture otherwise than literally: husbandry is the most conservative of all arts. And, though these methods are not now practised in England, the same procedure is adopted in maize-growing countries. Thus, in Kenya, our normal procedure is, where conditions permit, to plough and cross-plough, with possibly a third ploughing; the seed, too, is often planted behind the plough, and immediately harrowed in. And our ploughs are infinitely superior to anything the Romans devised. When the plough is drawn by oxen (whether the team be of two or fourteen) a cross-ploughing is often necessary because an ox-team does not plough as straight a furrow as a horse-team, and there are generally places which the plough has missed in the first ploughing. Further, the damper the climate, the worse the weeds, and one ploughing is often not enough to cover the weeds properly. Therefore, I maintain that the type of ox-drawn plough[17] used—provided it turns a furrow—cannot be said to affect the need for cross-ploughing.

'Ploughshares of the Early Iron Age and Roman period are not

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[15] N.H. XVIII, §18, 48. And Pliny's words 'Latitudo vomeris cespites versat' (loc. cit.). are conclusive.

[16] The probable etymology of 'porca' is porcus, and the literal meaning 'little pig'.

[17] Only when a tractor is used is one ploughing sufficient under normal tropical conditions.

uncommon, and consist of a simple metal point designed to fit on to the share-beam, without any device for undercutting and turning over the sods. Such a plough simply scratches a groove in the soil'. (Curwen, p. 268). But the discovery of metal shares only does not necessarily mean that the ploughs they belonged to did not possess other parts made of wood which could turn over the sods. The Roman plough was made of wood, and wooden mould-boards were used in Britain as late as 1830;[18] and in the Sussex plough already referred to even the coulter is made of wood.[19] Hence we may reasonably infer that people who had the intelligence to make an iron share, had also sufficient intelligence to provide their ploughs with some means of inverting the soil ; for inversion is absolutely necessary in levelling a slope ; and we may conclude that the mould-boards, together with the rest of the ploughs, have perished. A drawing in a MS of Caedmon's *Paraphrase* shows that the ' Vergilian ' or Italian type of plough was used in England from early modern times ; this plough has a mould-board. (Fig. 5).

When we approach the problem of ploughs of earlier periods than the Iron Age, we are on far less sure ground. That ploughs of a sort were used is quite clear ; not so clear, whether they ploughed a furrow or scratched a groove.

The ploughs figured in the rock-carvings from the Maritime Alps[20] appear to possess a wooden bar which was driven through the ground (fig. 6), like the ancient Egyptian plough (fig. 7)[21] which, we know, merely scratched a groove in the soil. On some of the megalithic remains near Carnac in Brittany are sculptured figures which M. le Rouzic believes to be ploughs (' hache-charrue '). Examples from the Dolmen des Marchands and the tumulus of Mané-er-H'roëk at Locmariaker are shown in figs. 8 and 9.[22] These things, if they do represent ploughs, can have done no better work than the Alpine and Egyptian implements. My contention, however, that the ploughs which worked in the Early Iron Age fields had mould-boards, does not apply to ploughs of the Neolithic, Copper and Bronze Ages.

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[18] Fream, loc. cit., 47.

[19] *Reliquary*, N.S. XI, 219.

[20] M. C. Burkitt, *Our Early Ancestors*, plate 28, fig. 1.

[21] After Wilkinson, *Ancient Egyptians*, abridged ed., 1854, II, fig. 359.

[22] Z. le Rouzic and C. Keller, *Locmariaker : La Table des Marchands*. (Nancy, 1910). My own copies of these are at present inaccessible to me ; figs. 8 and 9 are therefore after Le Rouzic.

FIG. 5. 'VERGILIAN' TYPE OF PLOUGH. (Caedmon's 'Paraphrase')

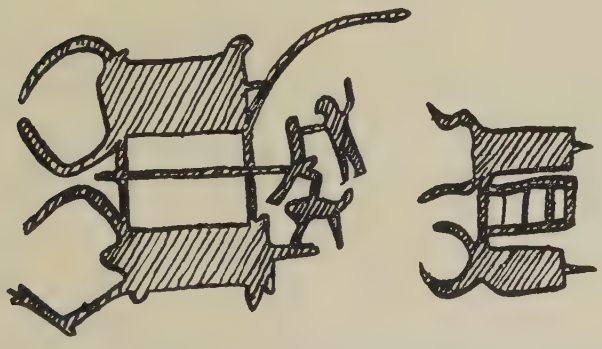

FIG. 6. PREHISTORIC PLOUGH AND HARROW. (Burkitt)
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FIG. 7. ANCIENT EGYPTIAN PLOUGH. (Wilkinson)

## 2. The Harrow

The plough implies the use of an implement to break the clods and render the land fit for seeding. The simplest and most primitive form of harrow was doubtless the 'bush-harrow'; though in the passage in Vergil,

> Rastris glaebas qui frangit inertes,
> Vimineasque trahit crates,[23]

there is some doubt as to the interpretation of 'crates', which some consider means 'bush-harrow' (the 'arbuteae crates' of l. 166), while others take it to mean 'osier hurdles'.[24] In any case, a bush-harrow is a most ineffectual implement, as I have proved from using one; and even primitive man would soon devise something better. Martyn's interpretation of 'crates' as 'hurdles' suggests that the rectangular implement with four cross-bars in Burkitt, plate 28, fig. 1 (fig. 6 *ante*)—which he does not mention in the text—may be a heavy hurdle used as a harrow.[25] On the other hand, it might conceivably (though perhaps with less probability) be regarded as a very early form of drag-harrow, with wooden teeth set in the beams, like the Roman irpex, 'Genus rastrorum ferreorum, quod plures habent dentes ad extirpandas herbas in agris'.[26] The shape is not mentioned; such harrows are generally triangular, and with iron or wooden teeth do quite good work. In the earliest representation known to me of this type of harrow (14th century), four transverse bars have teeth as well as the frame.[27]

## 3. Lynchets or Terraces

The formation of lynchets, or as we now call them, terraces, is one of the objects of a coffee-planter in cultivating his plantation (Fig. 10). I grant that our terraces are only a fraction of the width of the Celtic lynchets, but the method employed, and the result, are the same; and as Dr Clay says (p. 57) they can be formed only by ploughing the lower furrow, so that all the soil is turned down-hill, bringing back the

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[23] Georg. 1, 95.

[24] So Martyn.

[25] Incidentally, one of the men in fig. 6 appears to be twisting an ox's tail, a common method in Africa of inducing a lazy ox to move.

[26] Festus, p. 339, s.v. Irpices. 'A kind of iron rake with many teeth for tearing out weeds in the fields'.

[27] In a 'Shepherd's Calendar', in the Brit. Mus.; figured in Ditchfield, *Old Village Life*, p. 137.

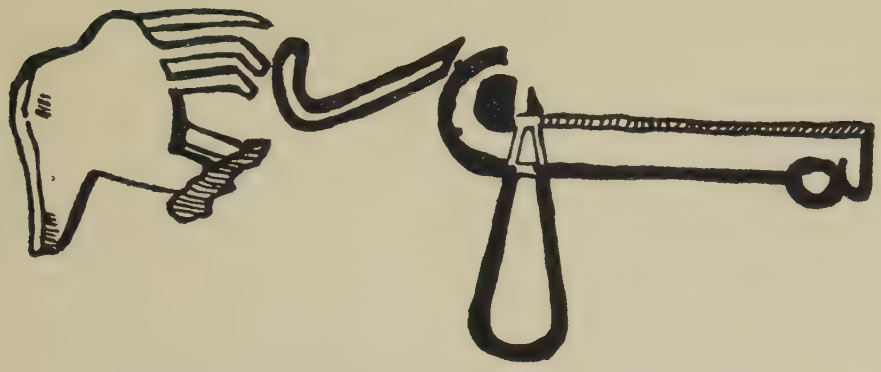

FIG. 8. CARVING OF PLOUGH, 'DOLMEN DES MARCHANDS'. (Le Rouzic)

FIG. 9. CARVINGS OF PLOUGHS, MANÈ-ER-H'ROËK. (Le Rouzic)

FIG. 10. TERRACES, KENYA COFFEE PLANTATION
A–B, natural slope

plough idle instead of ploughing the upper furrow. Nowadays we use a ' one-way ' or ' hillside ' plough, which has a reversible share held in place by a catch ; at the end of each furrow the share is swung under the plough into position for the next furrow.

Our ' lynchets ', on a slope such as shown in fig. 10, have a negative lynchet 2 ft. high ; this can be produced in about two years by 3 to 4 ploughings a year, the level strip being disc-harrowed after each ploughing. On a rough estimate, one might put the formation of a Celtic lynchet 10 ft. high and 200 ft. wide at about 40 years, if it received two ploughings a year ; if it was only ploughed once a year the time would be longer. Once a coffee terrace has been properly formed, it does not need to be ploughed with a ' one-way ' plough every time, as an ordinary plough will preserve the proper level. So prehistoric man probably did not find it necessary to plough the lower furrow only every time, once his lynchet was established.

Our object in levelling the slope by terracing is to stop soil-wash, the worst thing in nature with which the planter has to contend ; and I can see no other reason for the ancient lynchets. The mere fact that ground is sloping does not make it unsuitable for growing corn in wet climates, as Dr Clay says (p. 58). For in East Africa, native fields of maize, millet, and the short-stalked *eleusine coracana*, are often found on very steep slopes ; and as long as they are prepared by hand (with ' hoes ') the soil washes very little in comparison with ploughed land. It is when the plough comes into use that soil-wash starts ; hence the necessity of flattening the slope. The formation of lynchets therefore implies that soil-wash occurred, and that they were deliberately formed to prevent it.[28]

### 4. Manuring and Rotation

It is not quite clear what Dr Curwen means by his statement that there is ' no visible evidence of two-field or three-field rotation of crops ' (p. 286), for a number of fields side by side need not imply any sort of rotation. Even if the Britons marled their land with chalk,[29] and the Welsh spread wood-ash on their fields,[30] there are no grounds for supposing that they had any sort of rotation ; for ' the Romans

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[28] Dr Curwen considers that lynchets were not formed intentionally (p. 273).

[29] Pliny, N.H. XVII, §6, 4, seq.

[30] *Mabinogion* ; quoted by Curwen, p. 287.

seem to have had some glimpses of rotation of crops ; but it does not appear that any system of agriculture founded upon this knowledge was in general use among them '.[31]

Perhaps something can be learnt in this connexion from native agricultural methods in Africa ; and the following account of Nandi[32] agriculture will perhaps suggest methods which may have been practised by the more primitive of the early inhabitants of Britain. The Nandi when preparing new ground for eleusine corn, break up the turf with hoes. The turf is then collected into small heaps, and fired, and left to smoulder till the grass is burnt out.[33] The heaps of burnt earth are then scattered over the ground, dug in with hoes, and a tilth is prepared for the seed. The usual method of planting is to have a little of everything in the same patch—eleusine, millet, maize, beans, and sweet potatoes. Next year the stubble is dug over, and maize and millet planted, but not eleusine ; for the Nandi consider that the ground must be pared and burnt every year for this crop. So fresh ground is prepared. After four or five years the patch is abandoned, and new ground taken up. The cultivated fields are communal, and each man's holding is a strip separated from the next holding by a narrow path.

We have here no rotation, but some idea of the manurial value of wood-ash. The idea of leaving a patch of cultivated land after a few years is due, not so much to a recognition of the benefit derived from fallowing, as to the repressed nomadic instincts of the Nandi, for they frequently move house as well. The natives in this part of the world have not attained to the plough because a small area only need be cultivated to support a family, and each man grows his own food. The plough is the production of harder climates where a larger area is needed under primitive methods of tillage than can conveniently be prepared by hand.

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[31] Daubeny, *Lectures on Roman Husbandry*, p. 124, quoted by Conington, *Vergil* (Bibl. Class.), I, 159.

[32] I take the Nandi as an example although they are a pastoral tribe, because their agricultural system (borrowed from the Bantu Kavirondo) is very well defined ; and because I am much better acquainted with their methods than with those of other tribes.

[33] The old-fashioned process of paring and burning formerly practised in England.

# Notes and News

## THE ARCHAEOLOGIST AND THE MAN IN THE STREET

The following newspaper quotation[1] is an opinion about archaeology so common as to constitute a challenge worth accepting:—

'How should they do it?'

'There are other questions easier than that of the Vallum.

'Why was a naval detachment at Birdoswald? Did Tacitus ever visit Britain? When and where was the Ninth Legion annihilated? How were messages sent from Britain to Rome in a few hours? How did the Romans, with the primitive tools at their disposal, manage to quarry and shape the enormous quantities of stone required and perform the monumental labour of building the Wall in two or three years? A tee-piece of the finest tool steel was found in Vinovia; whence came it, or how was it made and by whom?

'All those are fair questions. So long as the experts are compelled to submit theories as answers, they cannot afford to be contemptuous of inexpert theories, which, at least, frequently embody the virtues of interest, intelligent imagination and a respect for the probable'.

How does the notion arise that, short of a solution, one opinion about a riddle is as good as another? It is belied by human experience as a whole. No deep thinker admits its validity, but if his subject looks easy, it is often expected that he should. In fact, this is an old question. Is authority always right, and is ignorance always wrong? On the side of ignorance, let us admit that 'fools step in where angels fear to tread', and sometimes succeed; on the side of authority, that familiarity with any problem, from coal-hewing to philosophy, entitles the expert therein to respect. But each side has its special temptation. Ignorance presumes upon success, and authority tends to pontificate. The resultant confusion gives rise to the notion which we questioned.

But does the archaeologist spend his time theorizing about unanswerable riddles? If he does, he is not doing his proper work, which is to collect, by observation or excavation, the facts which bear upon them. For example, asked why a naval detachment was at Birdoswald, he would reply that at least two inscriptions[2] record marines helping to build Hadrian's Wall, a work in which varied drafts[3]

[1] *North Mail and Newcastle Chronicle*, 26 April 1932.

[2] *Corpus Inscriptionum Latinarum*, VII, 864, and a new stone discovered by Mr E. B. Birley this spring.

[3] *cf. C.I.L.*, VII, 775 (Dumnonians), 863 (Catuvellaunians).

were engaged, thus permitting the facts to tell their own tale. His only merit lies in having come by the facts.

The question whether Tacitus ever visited Britain would receive the answer that little is known of Tacitus outside his books, and nothing which suggests that Tacitus was ever in the island. If anyone said that Tacitus could have paid a visit to his father-in-law Agricola, the Governor of Britain, no one would deny that this idea possessed both 'interest, intelligent imagination and a respect for the probable'. But the expert would abstain from the theory.

Nor would he waste time asking when and where the Ninth Legion was annihilated. An inscription[4] of A.D. 108–9 is the last record of this Legion in its headquarters at York. After that date it appears nowhere else, and its place is taken, not later than A.D. 125, by the Sixth.[5] Again, Fronto[6] mentions heavy casualties in the British Army in Hadrian's first years. All this roughly dates the disappearance of the Legion. But who can say whether it fell in battle or was cashiered, wholly or in part? And if its end is doubtful the question where it happened is premature. Still less is any theory required about messages being transmitted from Britain to Rome in a few hours, since no ancient source supports the notion.

Roman quarry methods are no mystery. They can be studied in many places[7] throughout the Empire, including Hadrian's Wall. Actual Roman tools[8] exist, in wrought and tempered iron, and Roman sculptured representations[9] show many types. These tools are like the modern ones, primitive because they are simple. Roman cranes and derricks for handling stone are described in literature[10] and appear in sculpture.[11]

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[4] *C.I.L.*, VII, 241.

[5] Parker, *The Roman Legions*, pp. 161–2; Ritterling, *Paulys Realencyclopädie*, XII, col. 106.

[6] Fronto, ed. Naber, p. 218; *Hadriano imperium obtinente quantum militum a Britannis caesum.*

[7] Odenwald, Germany: Neuburger, *The technical arts and sciences of the ancients*, pp. 400–1, figs, 542–7; El Medol, Spain: Mélida, *Monumentos romanos de España*, pl. 1; Rome: *Bolletino Comunale*, 1888, tav. I–II. No proper account exists of the quarries on Hadrian's Wall at Shawk, Coombe Crag, Haltwhistle Fell, Limestone Bank and Fallowfield Fell.

[8] Collingwood, *Archaeology of Roman Britain*, fig. 65*t*, chisel; Curle, *A Roman frontier post and its people*, pl. LVII, axes. [9] Neuburger, *op. cit.*, p. 396, fig. 538.

[10] Vitruvius, *De Architectura*, X, 2; in Morgan's translation, pp. 285–90. For stone saw-mills, worked by water-power, see Ausonius, *Mosella* 363, *stridentesque trahens per levia marmora serras.* (Note 11 *on p.* 340)

The 'tee-piece of finest tool steel' from Binchester is not surprising. These iron cramps[12] were not uncommon, and habitually of good metal; but analysis[13] would probably reveal less obvious differences between it and tool steel.

The Vallum, which produced this kettle of fish, has been the object of much recent field-work and excavation.[14] Many theories have been made about it, but not by experts. On the Vallum only one expert exists, namely, Mr F. G. Simpson, who has thoroughly studied its characteristics: and, after stating the problem,[15] he has been quietly gathering more facts about it.

The new facts, observed data whose meaning is clear, add much to knowledge, but are too few to provide a comprehensive account. Less thought goes to securing them than to defining the given problem and selecting the spot for its solution.[16] Therein lies the need for detailed knowledge of the monument, upon which the expert bases his claim to recognition.

Finally, no expert despises those who would study the facts with him, but the necessity for such study is preparedness in the terms. For such research leaves little time for imparting its methods, and none for irrelevant argument. Indeed, the methods themselves are often experimental, as in any similar science. This state of affairs forms the real argument in favour of the recent proposal to found an Institution for teaching archaeological method. When more people know it, more will expound it, and the public will not then fail to appreciate either the scientific value of archaeology or the exacting training that it requires. Meanwhile, it will keep its place in the public estimation as a pursuit exciting rather than exacting, spectacular rather than sober, and simple rather than highly complicated. I. A. RICHMOND.

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[11] Crane: Relief of Haterii, Strong, *Art in Ancient Rome*, II, p. 65, fig. 343 and *Legacy of Rome*, p. 305, fig. 23. Derrick: Lugli, *Forma Italiae*, I, pl. I and Reinach, *Repertoire de reliefs grecs et romains*, p. 422, 1.

[12] Durm, *Baukunst der Römer*, p. 206, figs. 209, 210: Vitruvius, *De Architectura*, II, 8, 4.

[13] See discussion in Blümner, *Technologie*, IV, 349–52.

[14] Simpson and Richmond, *Excavations on Hadrian's Wall in the Gilsland-Birdoswald-Pike Hill sector*, 1928, *Cumberland & Westmorland Antiq. & Arch. Soc. Trans.*, N.S. XXIX, 303–15; Simpson and Bosanquet, *Northumberland County History*, XIII, 484–565.

[15] Simpson and Shaw, *The purpose and date of the Vallum and its crossings*, *C. & W. A. & A. Soc. Trans.*, N.S., XXII, 353–433.

[16] For an amplification of this view, see Collingwood, *Journal of Roman Studies*, XXI, 36–8.

## THE LION AND THE UNICORN

In his very interesting article entitled ' The Lion and the Unicorn ', printed in ANTIQUITY, December 1930, Mr CYRIL G. E. BUNT* gives an astronomical and religious origin to this ancient legend.

He points out that, ' to the Sumerians, Babylonians and Assyrians —indeed to all primitive people—one of the chief events ever recurrent in their lives was the coming of Spring. The sequence of the seasons is personified in their hierarchy, and, as a preliminary to the full effulgence of summer, the Sun-God finally vanquishes the powers of Winter during the Season of Spring. . . The most significant fact, for us, is found to be, that, at this period, when the Summer solstice was in Leo (the Lion) the spring equinox was in Taurus (the Bull). Spring, the bringer of new life to the earth, was inevitably followed by Summer's fierceness. Thus we may say that the lion and bull (generally with one horn, be it remembered) symbolize the triumph of Summer over Spring '. I would suggest that this astronomical symbolism of the myth is a later, probably Babylonian, development, and that an earlier form of the myth is to be found in ' The Epic of Gilgamesh ' and is depicted on the earliest cylinder-seals of Sumer and Akkad, which date back to about 3000 B.C.

In the ' Epic ', Gilgamesh, who was a legendary king of Erech and of divine origin, incurred the wrath of the goddess, whom the Babylonians called Ishtar. In revenge for the slight which Gilgamesh inflicted upon the goddess, she caused a bull of unsurpassed strength to be created, and sent it to attack and kill the hero. Gilgamesh, with the assistance of his friend Enkidu, overcame and slew the bull, but Ishtar gave the credit of the slaying to Gilgamesh, who by this act, established his position with the people as hero and king. Enkidu was the strong man, who lived with wild beasts and finally succumbed to the charms of the courtesan who was sent to tame him. After Enkidu surrendered to the courtesan, the wild beasts fled from him and he came and dwelt with the shepherds, and, being of great strength, he hunted and slew the lions which harried the flocks of the shepherds. On the cylinder-seals of Sumer and Akkad, which date back to 3000 B.C., we find, depicted over and over again, the scene of Gilgamesh, the king, in conflict with the bull and Enkidu in conflict with the lion. The next step in pictorial representation appears to be the conflict between the lion and the bull (often represented with one horn). Mr Bunt

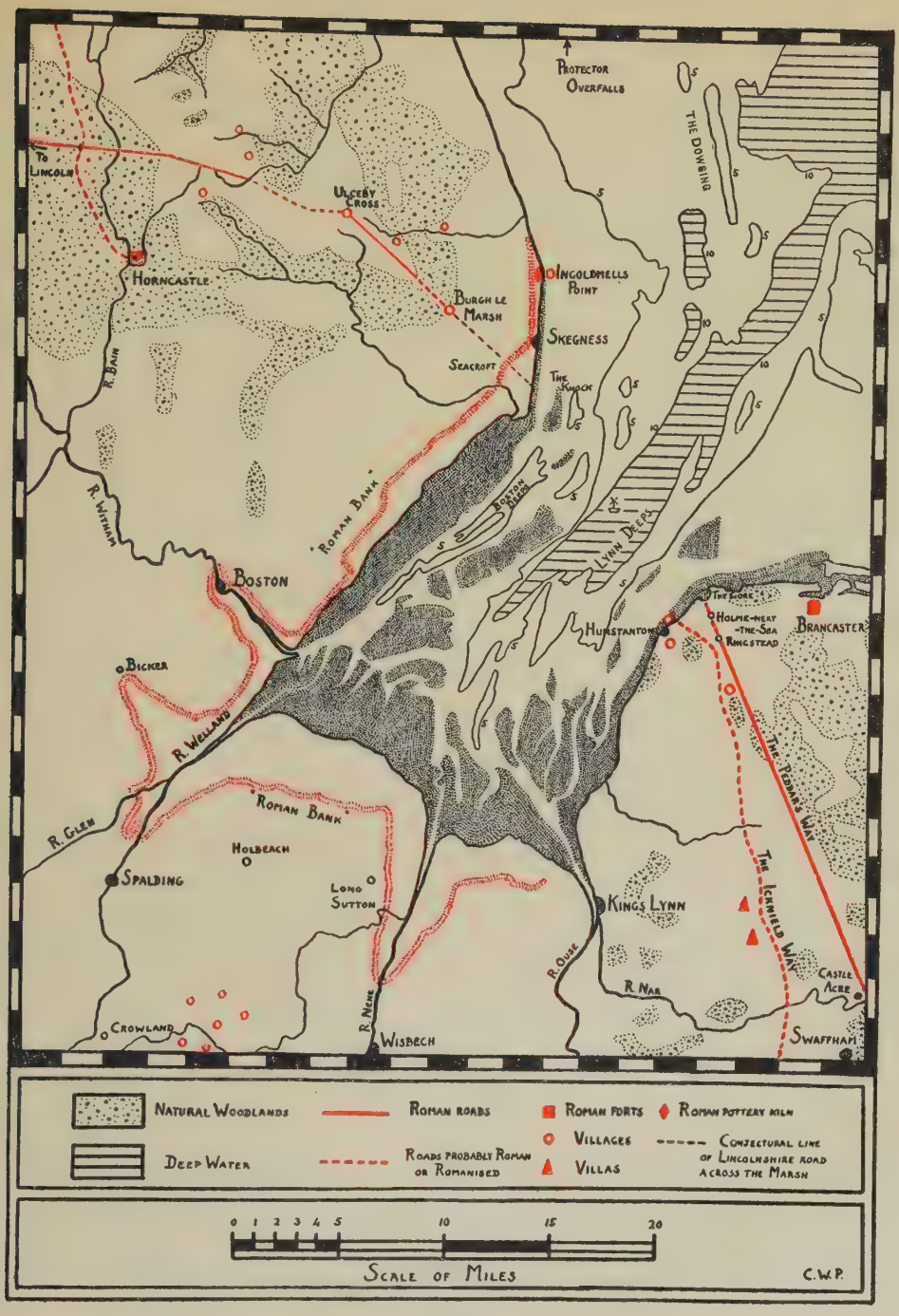
* We should be glad if Mr Bunt will send us his address.—EDITOR.

has given many illustrations of this conflict, which is the commonest motive on the seals of all the Mesopotamian cultures. He has pointed out the equation between the sun-god Shamash, and the lion, which was his symbol. But the lion was not only the symbol of the god, but also of the king. The earliest kings of Sumer, such as Ningirsu of Lagash, who was also a god, the eldest born of Enlil, had a lion-headed bird as his emblem. The lion-head also appears on the mace-heads of Mesilim and Gudea, both kings of Sumerian city-states and of divine parentage. Therefore, it is reasonable to equate the lion with the king as well as with the god, since the kings of Sumer and Babylon were essentially king-gods. Hence it is possible that the representations of the lion fighting the unicorn (bull), symbolized the account in the 'Epic of Gilgamesh' of the king slaying the bull sent by Ishtar to destroy him. If this is so, the astronomical symbolism was a later Babylonian development which was added to the original and simpler legend. Any explanation of the legend of the fight between the lion and the unicorn must take into account the association of the king-god and the lion from the earliest period, in conjunction with the account in 'The Epic of Gilgamesh', depicted on the cylinder-seals, of Gilgamesh who overcame and slew the bull, and of Enkidu, his friend, who was a slayer of lions. Mrs C. N. Deedes.

## THE ROMAN FERRY ACROSS THE WASH

The publication in 1928 of the second edition of the Ordnance Survey map of Roman Britain was followed by its review in Antiquity by Dr R. E. M. Wheeler who, among other things, showed how the map made intelligible the apparently aimless behaviour of the Peddar's Way in running to the coast on the northwest corner of Norfolk, where there is no known Roman settlement of any importance save the Saxon Shore fort of Brancaster which lies 5 miles east of the point where the road meets the sea. The explanation is found in the existence of a Roman road running east and southeast from Lincoln to meet the opposite shore of the Wash in the neighbourhood of Skegness, which would seem to postulate some sort of a ferry across the Wash in Roman times. The credit for having first pointed out this possibility belongs to Canon E. H. R. Tatham, formerly vicar of Well. (*Memorials of Old Lincolnshire*, 1911, p. 49).

A glance at the map shows that the force of the ferry theory is inescapable, but there are certain problems which will have to be


To Lincoln
Horncastle
R. Bain
Ulceby Cross
Protector Overfalls
The Dowsing
Ingoldmells Point
Burgh le Marsh
Skegness
Seacroft
The Knock
R. Witham
Roman Bank
Boston Deeps
Lynn Deeps
Boston
Hunstanton
The Score
Holme-next-the-Sea
Ringstead
Brancaster
Bicker
R. Welland
The Peddar's Way
Roman Bank
R. Glen
Holbeach
Spalding
Long Sutton
Kings Lynn
The Icknield Way
R. Ouse
R. Nar
Castle Acre
R. Nene
Crowland
Wisbech
Swaffham
Natural Woodlands
Deep Water
Roman roads
Roads probably Roman or Romanised
Roman forts
Roman pottery kiln
Villages
Villas
Conjectural line of Lincolnshire road across the Marsh
0 1 2 3 4 5 10 15 20
Scale of Miles
C.W.P.

solved before the matter is in a satisfactory state, and it is the object of this note to point out their nature.

The first question to be settled is where the two roads meet the present coast line. In the case of the Peddar's Way this would seem to be simple since it appears to go without a deviation right to the beach at Holme-next-the-Sea, but it is by no means certain whether the existing stretch from Ringstead to Holme represents the original line. During the dry part of the year 1929 Mr O. G. S. Crawford and Wing-Commander Insall, V.C., made an observation on the ground that on the north side of the village of Ringstead, just before the line of the Peddar's Way is taken up once more by a modern road, a broad band of parched grass veered away to the westward in the direction of Hunstanton as if to join the modern road which runs that way, and to terminate somewhere on the cliffs to the north of the modern resort. At Holme-next-the-Sea there is some hummocky ground in the line of the Peddar's Way on the seaward side of the village which is called 'British Encampment' on the 6-inch Ordnance Sheet, but this identification is entirely without authority.

If the Peddar's Way really passed through Holme it must have encountered the modern sea coast at the inlet known as the Gore. One thing at least is certain—that the Way reached the modern sea coast somewhere between Hunstanton and Holme and therefore at some point along a front of only two miles.

The problem of the coast termination of the Lincolnshire road is much more difficult. The line of the road from Lincoln may be traced with certainty past Wragby, Hatton, and Sturton, leaving Horncastle to the south and mounting on to the southern end of the Wolds across Flint Hill to Belchford and Tetford. From here its course to a considerable Romano–British settlement at Ulceby Cross above Alford has not been finally determined, but from Ulceby Cross it takes a decided turn to the southeast and is last clearly visible by Welton vicarage, pointing in the direction of the townlet of Burgh-le-Marsh which stands on a hillock dominating the coastal plain known as the Marsh. There can be little doubt that the road reached Burgh, but from here to the coast, a matter of five miles, its course is quite unknown. The name of Burgh seems to promise a Roman settlement, but there is practically no evidence that there was ever more than a slight occupation of the site in Roman times. The Roman material found on the site seems to be confined to coins of the Antonines which have been discovered on the site of the churchyard of the ruined church of St. Mary.

The only Roman site of any importance or authenticity along the coast here is at Ingoldmells Point, where considerable quantities of Roman rubbish were regularly exposed by the erosion of the sea until the erection of great coast protection works at this point sealed down the site with concrete. The pottery from this site has been identified by Dr Felix Oswald as dating from the first to the third centuries. The site is too far north of Burgh to be likely as a terminal point of the road, especially since it has recently been proved that it was probably not strictly on the open sea at all in Roman times.

If the road was making for the end of a ferry it is likely to have continued in the same line as from Welton to Burgh, and so reached the modern coast line at Seacroft south of Skegness and opposite the considerable sand banks known as the Inner and Outer Knock, which are probably an ancient extension of Gibraltar Point now overwhelmed by the sea. There is no recognizable trace of the road across the Marsh now, but it may not be without significance that the line of the modern road following the Cow Bank drain towards the sea past Seacroft station is continued by the parish boundary of Skegness out on to the beach in a straight line and points to the northern end of the Knock Bank.

Traditions and documentary evidence both point to the disappearance under the sea of some place of importance, possibly Roman. When Leland visited the coast during his tour he was told that at Skegness there had once been ' a great Haven towne ' with a castle and surrounding wall, but it was ' clene consumed and eten up with the se '. Tradition names this place ' Wilegripe ' and places it at a point four miles out into the Wash. More definite evidence of the disappearance of a Roman site is provided by the mention in the Ingoldmells manorial rolls of a piece of land called ' Chesterland ' or ' Castelland ' which is mentioned by both names indifferently in 1345, and again in 1422 four acres of land in ' Chesterland ' are mentioned as being surrendered by one William Skalflete (*Court Rolls*, p. 248). This is the last mention of this land, and it is to be presumed that it was swallowed up by the sea in the great inroads of the later Middle Ages.

Roman pottery may be found here and there along the coast from Chapel St. Leonard's southwards to Gibraltar Point, and it is probable that the greater part of it has washed out of the Ingoldmells site, but it is impossible to exclude the chance that it may come from drowned sites. A Skegness fisherman, now dead, claimed to have brought up

Roman pottery in nets from off the Knock, but, whatever he found, it does not survive.

In spite of the identification of Wainfleet with the mythical VAINONA by the Ordnance Survey there is not a particle of evidence for any Roman site there. The so-called Roman salt works south of the town is a site which is well worth proper investigation with the spade but, although there is abundant evidence in the long banks of calcined material that some fairly extensive enterprise has been conducted here, a diligent search of the surface by the writer has not produced a single datable object, much less the quantities of Roman pot rubbish which would almost certainly be found there if the works have a Roman origin. This site seems to have affinities with the Red Hills of Essex.

Thus up to the summer of 1931 the surface evidence of this part of the Lincolnshire coast has not justified the identification of any existing site either with the Roman road or its destination, the presumption being that both have been lost under the sea.

Professor H. H. Swinnerton has recorded[1] the results of work on the recent geology of the Lincolnshire coast and made reference to the traces of human settlement both before and during the Roman occupation. It is not our purpose to concern ourselves in detail with his conclusions about the state of the coast in the Bronze and Iron Ages, but he makes it abundantly clear that in Roman times the coast was comparatively sheltered from the full force of the North Sea in strong contrast to its present exposed condition. When the trees of the Forest Bed which underlies the peat exposed along this coast were growing he considers that the land had an elevation of 25 feet above its present level. At the close of the Bronze Age there was a slight elevation, but ' on the whole it would seem that little or no downward movement took place between the close of the Bronze Age and the later years of the Roman occupation '. He goes on to say. ' The existence of Scrobicularia and Cardium at intervals along the whole length of this strip of coast together with the subsequent accumulation of the upper post-glacial clays shows that for a long time after the departure of the Romans this strip must have occupied a sheltered estuarine situation. Today it lies exposed to the full onslaughts of the North Sea waves '.

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[1] ' The post-glacial deposits of the Lincolnshire Coast ', by Dr H. H. Swinnerton. Quarterly Journal of the Geological Society, vol. LXXXVII, part 2. 1931.

The existence of numerous sites on the foreshore along this part of the coast where sea water appears to have been boiled down for salt in the late Bronze Age and the Iron Age make it unlikely that the coast line varied very greatly from its present trend. No one would take the trouble to carry the water a long way before treating it and so it may safely be assumed that it was not far from these sites. The Roman site at Ingoldmells Point takes advantage of a large hummock of boulder clay which gives a slight elevation over the surrounding Marsh and has resisted the erosion of the sea more effectively in modern times. Its occupants looked out on the sea at no great distance but it was not the North Sea in all its strength which broke on their coast. The shoals called the Protector Overfalls, Docking, and Dowsing were then an effective barrier to the irruption of the full force of the sea, with the result that this coast was fringed by what amounted to a great brackish lagoon into which flowed the main ocean at high tides. Under conditions of this kind shell-fish like the cockle (*Cardium edule*) could flourish and clays be deposited which now would have no chance to form. It is Professor Swinnerton's opinion that the change in the circumstances of this coast is not due so much to any subsequent sinking of the North Sea bed which carried the shoals below the height of effective protection, as to their progressive erosion by the sea, which reached a stage in the late 13th and early 14th centuries at which there was no effective resistance to an unusually high tide with the result that disastrous floods afflicted the Lincolnshire Marsh. These floods are a matter of history.

The strong probability that this was the course of events makes it necessary to review the position of the so-called ' Roman Bank ' which runs round the coast from north of Ingoldmells Point to the neighbourhood of King's Lynn. The need for this coast protection can only have come into existence with the change of conditions on the coast and it has always been the opinion of the writer that the work is medieval and has been constructed section by section locally. It is a suspicious circumstance that the work shows very little regularity and plan and that along its whole extensive line there are no records of Roman finds having been made in association with it. Knowing the amount of rubbish which cumbers even meagre Romano–British sites, it is remarkable that, granted the Roman authorship of the Bank, there are no points along its line where there are traces of the large concentrations of men who must have been employed to throw it up. It is also an awkward fact that the two Roman sites which either were or may be

assumed to have been on this coast—Ingoldmells Point and the lost site near Skegness—are both on the seaward side of this protective line.

Air-photographs taken over the Cambridgeshire and Lincolnshire Fens recently have shown that, far from being an uninhabited waste in Roman times, there were areas occupied by native villages almost as thickly scattered as those on Salisbury Plain at the same period. This applies especially to the silt-ridge south of Whaplode and Gedney east of Crowland as well as to the line of the old Great Ouse between Littleport and Wisbech. It is hoped that air-photograph mosaics of larger areas will yield many more sites.

We now return to the question of the possibility of a Roman ferry across the Wash. At the present time there is no more difficult crossing for sailing vessels on the East Coast than that of the mouth of the Wash from Norfolk to Lincolnshire. This statement is made on the authority of highly experienced yachtsmen who know the waters well, and a ferry would be quite impracticable at the present day because of the strong tides, dangerous sandbanks, and numerous currents. If a crossing was regularly made here in Roman times as part of a system of communication the conditions must have been much more favourable than now. The present width of the Wash across its mouth is now 14 miles and if the Knock is regarded as land which was probably above the surface in Roman times the width is reduced to 10 miles. The protection afforded to the Lincolnshire coast by shoals which were in all probability matched on the Norfolk side by the huge overhang of shallow water, quite 18 miles long, stretching north from Brancaster was considerable, and in view of this it is impossible to be sure just how wide the effective mouth of the Wash was in Roman times. It is a fairly safe speculation that it was considerably less wide than it is now so that the crossing was shorter, and the strong current from the north down the Lincolnshire coast can hardly have existed with the Protector Overfalls higher than they are now. The matter may be summarized by saying that on the Lincolnshire coast, at least, the terminal point was probably well below modern low water mark and that the same may have been the case in a lesser degree on the Norfolk side. A crossing shorter in distance than the modern one was thus made across waters which were strongly tidal but which were comparatively land-locked. It is unlikely that the sunk sites will ever be identified but a piece of work which can and should be done is the working out of the age of the roads which approach the ends of the crossing and that of the settlements along them. C. W. PHILLIPS.

WANSDYKE

Pitt-Rivers' section can be seen near the middle

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*facing p.* 349

## GENERAL PITT-RIVERS' SECTION OF WANSDYKE

In 1889 General Pitt-Rivers dug a section across Wansdyke at a point three-quarters of a mile NW of Shepherd's Shore (where Wansdyke is crossed by the Devizes and Marlborough road). This point lies just over a quarter of a mile NW of Old Shepherd's Shore. In the outer bank on the counter-scarp the section revealed what was plainly the ditch and bank of an older entrenchment. For once the General seems to have failed to have interpreted this correctly. He says :— ' The eastern side of the cutting appears to have cut through a large heap of chalk rubble, B, which was thrown up during the formation of the rampart. The relics above and below this line of dark mould were of precisely the same character, and the dark seam here appears to have been caused either by heaping up turf cut from the ditch, or by a deposit of surface mould thrown up undesignedly during the original construction of the rampart '.*

At this point, however, for a distance of about a quarter of a mile, Wansdyke coincides with an earlier entrenchment which was marked on the original one-inch Ordnance map (about 1806) but not on the subsequent large scale maps, until I had it re-inserted on the edition of 1925–6. The entrenchment in question runs roughly NW–SE ; starting from the Roman road at a point immediately NE of Horsecombe, it traverses Morgan's Hill, where it consists of two ditches and three banks. It is evident that the builders of Wansdyke utilized a portion of this linear earthwork for about a quarter of a mile. The mutual relationship between the dyke and the linear earthwork is well brought out by the accompanying illustration. On the south side the earthwork has been mutilated by some flint diggings, but it can still be traced both on the ground and from the air as far as the old Bath road, 750 ft. SW of Old Shepherd's Shore.

It will be plain that the relics found below the dark seam BR are not only older than the construction of Wansdyke, but also than that of the older earthwork. Since, however, a fragment of Samian ware was found in the chalk rubble forming one of the banks of the older earthwork, both earthworks would appear to have been constructed in or after the Roman period.

The General states specifically in the passage quoted above that there was no difference in character between the finds above and below the dark mould.

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*Pitt-Rivers, *Excavations in Cranborne Chase*, 1892, III, 252.

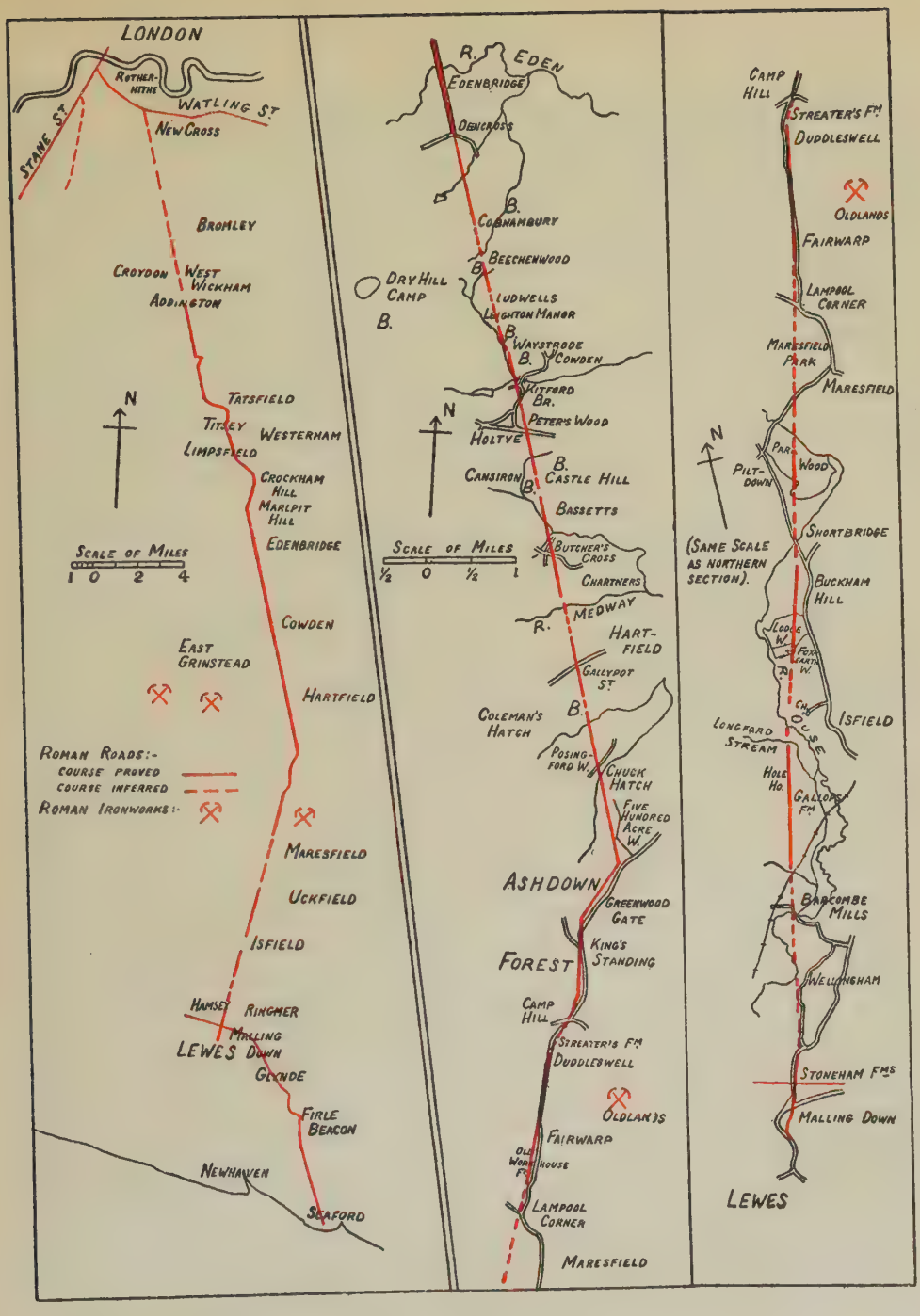
The remains of what might have been thought to be an older ditch were noticed in the main rampart itself, but the General denied this. He may well have been correct in this, for it would appear that the rampart lay too far to the south for any portion of the older entrenchment to have been included beneath it. In any case it is quite certain that the fragment on the counter-scarp itself represents the remains of this tri-vallate earthwork; and it might be worth while examining objects discovered in association with it again in the light of the knowledge of Romano–British and Iron Age relics which has accumulated during the past 30 or 40 years. O.G.S.C.

## ROMAN ROAD FROM LONDON TO SUSSEX

Recent discoveries, initiated by air-photography on Ashdown forest, have enabled the entire course of a new Roman road to be traced through Surrey, Kent and Sussex from West Wickham, near Croydon, through Edenbridge to Maresfield and thence down the valley of the Ouse to Malling Down, east of Lewes, where it connects with roads in the South Down area. Two detached portions of this route had previously been identified as Roman; the northern forming the Kent–Surrey boundary for $4\frac{3}{4}$ miles in a straight line from Wickham Court near Addington to Coldharbour Green on the escarpment of the North Downs above Titsey, and the southern (lying parallel with the other but half a mile farther east) from Marlpit Hill across the Eden valley at Edenbridge and up the slope of the ridge beyond, a distance of some 3 miles.

Investigations by Mr James Graham have established the portion connecting these two sections, but it is with that part of the route lying between Edenbridge and Lewes that the writer is directly concerned. A large hill-top camp, probably of Early Iron Age, with triple ramparts, crowns Dry Hill on the ridge to the south of the Eden valley at a point about $1\frac{1}{4}$ miles west of the Roman road, but until quite recently no other ancient sites had been discovered anywhere near the course of the road until the well-known Roman ironworks site at Oldlands near Maresfield is reached. The unpromising nature of the country had presumably checked investigation and no efforts appear to have been made to discover a southward continuation of the Roman road.

Air-photographs of the high ridge of Ashdown forest between Hartfield and Maresfield had disclosed portions of an ancient road, in


LONDON
Rother-hithe
Watling St
Stane St
New Cross
Bromley
Croydon
West Wickham
Addington
Tatsfield
Titsey
Westerham
Limpsfield
Crockham Hill
Marlpit Hill
Edenbridge
Cowden
East Grinstead
Hartfield
Maresfield
Uckfield
Isfield
Hamsey
Ringmer
Malling
Lewes Down
Glynde
Firle Beacon
Newhaven
Seaford
N
Scale of Miles
1 0 2 4
Roman Roads:-
course proved
course inferred
Roman Ironworks:-
R. Eden
Edenbridge
Oberons
Cowhambury
Beechenwood
Dry Hill Camp
Ludwells
Leighton Manor
Waystrode
Cowden
Kitford Br.
Peter's Wood
Holtye
Cansiron
Castle Hill
Bassetts
Butcher's Cross
Chartners
R. Medway
Hart-field
Gallypot St.
Coleman's Hatch
Posingford W.
Chuck Hatch
Five Hundred Acre W.
Ashdown Forest
Greenwood Gate
King's Standing
Camp Hill
Streater's Fm
Duddleswell
Oldlands
Fairwarp
Old Workhouse
Lampool Corner
Maresfield
N
Scale of Miles
½ 0 ½ 1
Camp Hill
Streater's Fm
Duddleswell
Oldlands
Fairwarp
Lampool Corner
Maresfield Park
Maresfield
Pilt-down
Park Wood
Shortbridge
(Same Scale as Northern Section).
Buckham Hill
Lodge W.
Fox Earth W.
Isfield
Ch.
Ouse
Longford Stream
Hole Ho.
Gallops Fm
Barcombe Mills
Wellingham
Stoneham Fms
Malling Down
Lewes

straight alignments and apparently of Roman construction, crossing the forest, and the northern portion was found to be pointing directly to Edenbridge. Suspicion that this was actually the continuation of the Edenbridge route was at once aroused, and a search of the intervening country has led to the discovery of abundant traces of the road at many points, sometimes in a perfect state of preservation, and the whole course has been properly established.

Identification of the remains was greatly facilitated by the fact that iron slag (known locally as ' cinder ') was very largely used for the metalling for considerable lengths of this part of the road, thus enabling comparatively slight remnants of the agger to be recognized as of artificial origin. By a fortunate coincidence Mr Ernest Straker was just completing his survey of the ancient iron sites of the Weald at this time[1] and the writer is greatly indebted to him for information regarding ancient bloomery sites in the vicinity of the road, and for assistance in investigating and comparing the cinder used in its construction. These ancient bloomeries (marked B on the map) produced cinder identical in type with that used on the road and *may* be of Roman or British origin, though in the absence of definite evidence (*e.g.* pottery) this cannot be proved, for this primitive method was long used. Obviously the huge quantities of slag required for the road must have removed all trace of many of the early bloomery sites.

The course of the road will now be described, starting from Edenbridge and working southwards. The existing lane from Dencross, near Edenbridge, follows the line as far as Cobhambury, a small farm on the Dry Hill ridge, remains of the agger being visible in places.

All trace is then lost through Cobhambury wood but at Beechenwood farm a strip of cinder metalling following an old hedgerow runs from the farm to a small but deep gully that crosses the line. Beyond this the field shows no surface-traces but air-photographs indicate the road clearly as a distinct light-coloured streak leading onward to Ludwells. These traces are in continuation of the Edenbridge line.

Nothing can be seen in the next three fields east of Leighton manor, but in Birchenwood field where the road descends to a gill the cinder is found along the line and a solid bed of it was discovered near the southern corner of the field. For the next 1000 yards the road departs very slightly from the alignment in order to follow a terrace along the east bank of the gill, where the cinder can be readily traced.

[1] *Wealden Iron.* G. Bell & Sons, 1931.

ROMAN ROAD, HOLTYE

Looking south along the line of the road towards Peter's wood  Note the cambered surface and ruts  The spade stands 3 ft. high and the metal rule is 6 ft. long

*facing p. 352*

ROMAN ROAD, HOLTYE

Looking west *across* the road, showing ruts in its surface. The trench on the extreme left was hacked through the concrete to obtain a section and the continuation of the road surface beyond the cut is faintly visible

It crosses this stream and the Kent Water dividing Kent and Sussex at a point 100 yards west of Kitford Bridge, Cowden, and sections of the cinder metalling are visible in the banks, giving the road an apparent width of 25–35 feet there. It probably lay upon a solid embankment across the valley, but is now buried under 2 feet 6 inches of alluvium.

The agger is distinctly visible as it leaves the valley and traces are to be found in the fields near Holtye House. It becomes very plain through Peter's wood where the perfect surface can be disclosed in places, and crosses the East Grinstead–Tunbridge Wells road 200 yards east of the White Horse inn, Holtye. On approaching the valley to the south of this road the agger is very clear and for a considerable distance is composed of very solid cinder. A section examined near the stream showed the agger in perfect condition, 15 feet wide and 1 foot thick in the centre with a pronounced camber. (See plates I–II). The cinder had rusted into a hard concrete mass which could only be broken with great difficulty. The agger is very plain beyond the stream up the slope of Castle Hill, and though invisible on the surface has been found in good condition at several points beyond in the fields of Bassetts farm.

On approaching the Hartfield–Cansiron lane at Butcher's Cross it becomes visible again, and south of the lane shows perfectly as a fine cambered strip some 50 feet wide across the field. A section here showed the road to have the unusual effective width of 27 feet (35 feet to the edges of the agger), the cinder metalling being as much as 16 inches thick in places. The perfect surface was also found to the south of the ridge on the descent to the river Medway, 500 yards west of Chartners farm, and the river is crossed at a convenient point where the valley is comparatively narrow. The line crosses the Coleman's Hatch–Hartfield road at Gallypot Street, and is indicated by a series of hedgerows and subsequently by the east side of Posingford wood. From the Sussex boundary to the forest the alignment is closely followed, no part of the road (after the first 350 yards), being more than 100 feet out of line, although several ridges and streams are crossed.

The road enters Ashdown forest at Chuck Hatch, traces of the agger being visible at once. It passes through a small croft and has been much damaged by later tracks. It is traceable up the slope outside the southwest edge of Five Hundred Acre wood and just beyond the crest the road becomes very distinct and perfect. From this point to Camp Hill, across the highest part of the forest, it assumes a very interesting form which is particularly well seen here. The agger is perfect, 18 feet wide with a distinct camber, and is accompanied by

ditches, 62 feet apart, the intervening side spaces being left flat and unmetalled. This form of construction is exactly similar to that of Stane Street across the highest part of the South Downs where it is accompanied by small ditches identical in shape and character 85 feet apart.[2] Similar ditches also occur on part of Ackling Dyke. The purpose of the ditches is obscure, for they do not seem intended primarily for drainage, and it may be that they were used to define a roadside zone to be kept free of vegetation or other obstacles when not actually metalled up to the ditches as on Stane Street.

The long alignment from Edenbridge comes to an abrupt and definite end, clearly defined by the ditches, just before it reaches the Groombridge–Maresfield road, and the Roman road makes a sudden turn of 134° southwestward, keeping roughly parallel to the modern road. It then follows the high ridge of the forest past King's Standing to Camp Hill in a series of four main short alignments designed to skirt the valleys sloping first eastward and then westward. Traces of all these alignments remain and have been definitely proved. The ditches show very plainly on the air-photographs owing to the grassy nature of the vegetation contrasting with the heather. Most of the forest section is metalled with local sandstone upon a bed of clay laid on the old heath surface, but near Camp Hill the use of cinder was resumed, this being brought no doubt from the Roman ironworks at Oldlands, only $1\frac{1}{4}$ miles distant.

At Camp Hill the modern road obliterates the track but diverges from it again near Fairwarp church where traces of the agger with its cinder metalling are again visible. Quarrying has obliterated it to the southern edge of the forest, but in the first field of Old Workhouse farm the perfect road surface with hard rusted slag metalling, about 14 feet wide, was found, and in the next field a portion of the agger is distinctly visible as a raised strip (containing the metalling) against the western hedgerow, 100 yards west of the farmhouse.

The road has not as yet been definitely traced through Maresfield park (which has suffered greatly by wartime disturbance), but immediately to the south of the Maresfield–Piltdown road its course is clearly marked, upon the same alignment, by a shallow depression which is also traceable in another field as it approaches a stream. Through the southern part of Park wood, Piltdown, and the western edge of Fairhazel wood beyond, the alignment is further marked by a distinct deposit of

[2] Curwen, *Sussex Archaeological Collections*, LVII, p. 137 and plates.

slag now mixed with small brown flints. The line of the road would pass through the bridge at Shortbridge.

In the park of Buckham Hill House there is a very clear piece of the agger, on the west side of a small pond, composed of a hard compact layer of slag about 17 feet wide. It is traceable onwards by means of the scattered slag and flints, closely following the alignment, through Lodge wood and Foxearth wood, emerging close to the southeast corner of the latter.

The exact position of the crossing of the river Ouse is not yet known but it must be almost due west of Isfield church, for only 500 yards farther on the course of the road is again certain, being marked by scattered slag adjacent to a long line of hedgerows past Hole House and Gallops farm. Near the farm part of the undisturbed metalling is exposed by a ditch. It is probable that between the crossings of the Ouse and of a western tributary, Longford stream, part of a drive to Sutton Hall lies upon the road. Apart from the actual crossings the route lies just above flood level.

It is rather surprising that slag was brought so far south, for the nearest source of supply is believed to have been at Maresfield, but it is clear that slag mixed with flints was used right down to a point some 700 yards south of Gallops farm. Beyond this the slag is not found and the road is therefore much more difficult to trace. A definite bed of flints does, however, mark its course with certainty in the south-east corner of a large arable field just before the alignment crosses the railway 600 yards north of Barcombe Mills. It is heading exactly for the crossing of the Ouse at the mill and there can be no reasonable doubt that it recrossed the river there. If this line was followed southward, as is probable, it would graze the large eastward bend of the Ouse near Wellingham (the river has, doubtless, eroded its eastern bank there considerably since Roman times), and follow approximately the southern portion of Wellingham lane, falling into the line of the main Isfield–Lewes road near Stoneham farm. Here it would intersect the line of another Roman road which ran along the foot of the Downs to Glynde and thence over Firle Beacon to Seaford,[3] but it certainly appears to have continued straight on to Malling Down, where a turf-covered agger skirting the western shoulder of the Downs is

[3] A. Hadrian Allcroft. *Arch. Journal*, LXXI, 201. [The Roman origin of this and of many others for which Mr Allcroft claimed a Roman origin, is doubtful. Many of them differ greatly from *aligned* Roman roads.—EDITOR.]

plainly visible. Perhaps this led down the Ouse valley to the sea, and so avoided the steep ascent by the more easterly route, but it is at least clear that the road connected the iron mines with the coastal downland area.

As for the northern destination it can hardly be other than London, for the line at West Wickham points directly to Rotherhithe only 10 miles distant; this would cut Watling Street at the junction of New Cross road with Pepys road, at the point where Watling Street in its arc from Greenwich to Southwark begins to turn northwestward towards London Bridge, the very place from which a radial road south-south-eastward could best be started. The road may have been planned to serve the dual purpose of connecting the iron mines with the London market and with a Sussex port at the mouth of the Ouse.

IVAN D. MARGARY.

## AN IMPORTANT LINK BETWEEN ANCIENT INDIA AND ELAM

No one who is interested in the archaeological discoveries at Mohenjo-daro and Harappa can fail to appreciate the letter of Dr Frankfort to *The Times* (26 March 1932).* The cylinder-seal that he has lately found at Tell Asmar is certainly of Indian workmanship, as shown by the elephant, rhinoceros and the gharial, or fish-eating crocodile, carved upon it. These animals, as is now well known, frequently appear on the seals of the Indus Valley civilization, but in the art of no contemporary culture. Cylinder-seals of Sumerian type are rare at Mohenjo-daro—we have found only two as yet—and none has been found at Harappa; but in view of the trading that clearly went on between India and Sumer it will not be surprising if a good number of seals of this convenient form are eventually found to have been used in ancient India. We should expect to find them at Mohenjo-daro especially, in view of its more easy access by river and sea to Sumer and Elam.

Dr Frankfort has dated his Mesopotamian find to approximately 2500 B.C., as it was found in a house of the time of the Dynasty of Akkad. The question arises: with which of the levels of Mohenjo-daro was it contemporaneous? And here it is noteworthy that in the same buildings as his Indian seal, Dr Frankfort also found a number of heart-shaped pieces of inlay and decorated carnelian beads, which as far as

* See reference in ANTIQUITY, June 1932, p. 227.—EDITOR.

Fragment of Steatite Vase found at Mohenjo-daro with unusual pattern similar to the one below. (*c.* 2800 B.C.)

Double Vase of Steatite found at Susa. (Period II, *c.* 2800 B.C.)

*facing p.* 356

we know at present occur only in the topmost levels of Mohenjo-daro. The two cylinder-seals found at Mohenjo-daro also come from the highest strata, and it seems likely, therefore, that the Indian seal unearthed in Mesopotamia will help us to date the upper levels, which we have before provisionally dated to about 2750 B.C.

We have lately found at Mohenjo-daro an equally interesting and important link between ancient India and Elam ; and these two finds in Mesopotamia and the Indus Valley, taken together, should eventually enable us to fix the period of Mohenjo-daro with a considerable degree of certainty.

Our new find was unearthed at a very low level, not far above the water-level in the soil when the river is at its lowest. It is a fragment of a steatite vase bearing exactly the same intricate and very unusual pattern as a double vase of steatite found at Susa in association with other objects of the Second Period of that site. This vase is illustrated by Dr Contenau in his *Manuel d'Archéologie Orientale* (p. 276) ; and it is reproduced here for comparison with our find. That the vase of which the fragment from Mohenjo-daro formed a part was an importation from Elam is rendered the more certain by its being a greenish-grey steatite, of which it is the only piece that has been found in the Indus Valley excavations.

The dates of the Second Period of Susa are, according to M. de Mecquénem, who is excavating there, and other authorities, *c.* 2800 to 2700 B.C., and it is, therefore, reasonable to regard the stratum in which we found our steatite fragment as of about the same date. If, then, on the evidence of Dr Frankfort's seal, we provisionally date the upper levels of Mohenjo-daro to *c.* 2500 B.C. and we accept *c.* 2800 B.C. as the date of Susa II, and hence of the level of our Elamite find, there would have been an interval of about 300 years between these levels—a conclusion to which I am already inclined on other grounds.

ERNEST MACKAY.

# Recent Events

*The Editor is not always able to verify information taken from the daily press and other sources and cannot therefore assume responsibility for it.*

Our contemporary, the *Bulletin de la Société préhistorique française*, has published an account by M. Viré of the discovery, by means of ' radiotellurie ', of a hoard of 15 coins of the 9th century A.D. They were buried in the Salle du Chef Normand in the troglodyte village of Haute Isle. Illustrations of some of the coins and of the jug in which they were found are published. Future developments will be awaited with interest. (*B.S.P.F.*, Feb. 1932, XXIX, 95–7).

At the Colonial Exhibition held in Paris last year were displayed a number of exhibits illustrating the archaeology of North Africa. An account published in *L'Anthropologie* (XLII, 55–66) complains that the exhibition failed in its object on account of the absence of labels. A map of North Africa in prehistoric times is criticized on the ground that it is rendered illegible by the overcrowding of every period on to a single map. It seems that the force of the slogan ' one map, one period ' is still not appreciated by prehistorians. By ignoring it they destroy the value of their own work. What practical value would there be in a map which attempted to show the bus, tram and train routes of London or Paris on the same plan ? The account contains trenchant criticisms which reach beyond the actual exhibition itself.

A French expedition has discovered a human skeleton, fossilized, in Tilemsi near the station of Asselar, in the Sahara, between Hoggar and Senegal. A detailed report, by MM. Boule and Vallois, will appear in *Archives de l'Institut de Paléontologie humaine*. It is claimed to be of Upper Palaeolithic age ; if so it is of great significance and will be welcomed by those prehistorians (including the present writer) who regard the Sahara as having been a dispersal-centre of races before it was a desert. (*L'Anthropologie*, XLII, 168 ; see also Bosch Gimpera, ' La prehistoria africana y el origen de los pueblos camitas ', *Anuario de Prehistoria madrilena*, I, 11–28).

Mr W. F. J. KNIGHT reports :—' About half a mile SSE of Bloxham in Oxfordshire seven inhumations, associated with fragments of Romano–British pottery, were discovered during 1929 and 1930. The pottery seems to show that there was a small settlement at or near the site from the early 2nd century until the 4th. The settlement is one of many which have been found, all apparently near rivers, in the basin of the Cherwell. The interments are remarkable : all the skeletons but one lay with their heads roughly to the north, a position not unparallaled (cf. *e.g. The Times*, 7 April 1931, p. 12, on interments near Ipswich), and some, probably three, were found buried face downwards, a fashion that seems to be unique at Romano–British sites. (Mr Philip Corder, F.S.A., kindly informs me that the face-downward burials at Wintringham in Yorkshire prove not to be Romano–British). Since my preliminary notice (*Oxfordshire Archaeological Society* : *report* 74, 1929, pp. 229–32 ; cf. M. V. Taylor and R. G. Collingwood in *J.R.S.*, 1929, XIX, p. 195), three more skeletons, VIII, IX, and X have been found in 1930 and 1931. Skeletons VIII and IX seem to have been buried in a single trench, as in Romano–British graves at Hook Norton (Margaret Dickins, *A History of Hook Norton*, p. 3). The arms of no. VIII were folded across the chest, and the bones of the forearms are unusually thick. A report on all the skeletons is expected. Skeleton X was found later, eastwards from VIII and IX. Boys of Bloxham school have helped in the recovery of the remains, and have carried out some excavation'.

A Society to be known as the Friends of the Palestine Museums (Palestine Art-Collections Society) has been formed, its interests extending ' to all objects illustrating the history and antiquities of Palestine and the development of the various movements which have their roots in that country '. Among the activities of the Society will be a survey of the material which does exist, the publication of catalogues which will make it more widely known, and the formation of a permanent exhibition in Palestine. The headquarters of the Society are 9 Cavendish Square, London, W.1.

A shrine of the Nabatean period is reported from Jebel Rumm, 25 miles east of Akaba, Transjordan. It contains inscriptions, one mentioning Rabel, the last ruler of the dynasty (*c.* A.D. 71–100). *The Times*, 17 June).

Some important carved ivories have been found in Samaria, where excavations have been resumed by the Joint Expedition at work there. These are representations of Ra, the Sun-god, holding a figure of Maat the goddess of Truth; Horus, Isis, and Nephthis, and Hah the personification of Eternity. It is thought that the ivories are the work of the same school as those found at Arslan Tash, near Carchemish, in 1928. (*The Times*, 16 June).

The discovery of the human skull found in 1931 by Mr C. Ter Haar in a bone bed at Ngandong, in the valley of the river Solo, Java, is referred to by Professor Elliot Smith in a letter to *The Times*, 3 June, and a detailed account by Sir Arthur Keith was printed in *The Illustrated London News*, 4 June.

Owing to the drought in Switzerland this summer some of the lakes have fallen to very low level and interesting observations have been possible on the site of the lake-dwellings at Corcelette, near Grandson, on the lake of Neuchâtel. The site comprises Stone and Bronze Age types. Numerous finds of swords, axes, flint implements and other articles have been placed in the Lausanne Museum. (*The Times*, 10 June).

The discovery by Mr Theodore MacCown of the skeletons in the Valley of the Caves at Mount Carmel in Palestine (reported briefly in *The Times*, 4 May, and *Nature*, 14 May) is described in some detail by Miss Dorothy Garrod, Director of the Joint Expedition of the British School of Archaeology in Jerusalem and the American School of Prehistoric Research, in *The Times*, 11 June, and *The Illustrated London News*, 9 July. In the latter there is also an article by Sir Arthur Keith on the importance of the discovery of this newly found type of Man (*Palaeanthropus Palestinus*).

M. Schaeffer, the well-known excavator and discoverer of the Ras Shamra tablets (see ANTIQUITY, 1930, IV, 460–6) is coming to London in October at the invitation of the University, to deliver three lectures. They will be given at King's College on 17, 20 and 21 of October at 5.30 p.m., and will be illustrated by lantern-slides and a film. Admission is free to all.

The subscribers to the Fund for establishing a British School of Archaeology in Iraq, as a memorial to Gertrude Bell, who died in Baghdad on 12 July 1926, have now appointed a Council on which the Universities of Oxford, Cambridge, Edinburgh, Durham, London, the British Museum, the British Academy, Royal Geographical Society, Royal Asiatic Society, Society of Antiquaries and other Societies are represented. The President is Sir Percy Cox (late High Commissioner for Iraq), the Chairman of the Executive Committee is Sir Edgar Bonham Carter, Mr E. H. Keeling is Honorary Secretary and Brigadier-General Sir Osborne Mance Honorary Treasurer. The funds raised up to the present total nearly £9,000. In addition, the income from sums of £6,000 and £4,000 bequeathed by Gertrude Bell and by her father Sir Hugh Bell to the British Museum on trust will, it is hoped, be payable to the School. The disposal of the income is under consideration. The office of the School is temporarily at 20 Wilton street, S.W. 1.

We have been asked to announce the appearance of two publications likely to appeal to readers of ANTIQUITY. One is a map of ' Neolithic Wessex ' published by the Director-General of the Ordnance Survey, Southampton. It is on the scale of 4 miles to an inch, and shows the long barrows, circles, inhabited sites and flint mines which fall within the area of Sheet 11 of the quarter-inch O.S. map. Physical features are indicated by layers ; the primitive forests have been restored upon a geological basis ; and the modern details of roads and villages are printed in a light grey, to assist identification. Rivers are in blue, and marshland is shown in the same colour. The archaeological items are numbered with reference to a schedule which, together with some explanatory text, is bound up in the same cover. The price is 4*s* (flat paper copies without text 2*s*).

The other is a pamphlet of 34 pages called ' Field Archaeology : some notes for beginners ', issued by the Ordnance Survey (6*d*). It can be obtained direct from the Ordnance Survey Office, Southampton, or any of the local agents, or from H.M. Stationery Office, Adastral House, Kingsway, W.C. 2. It gives a simple description of the main features of certain ' common objects of the country ', such as barrows (long and round), circles (of earth, wood and stone), standing stones, camps, Roman villas, castle mounds, cultivation terraces, trackways, linear earthworks (such as Offa's dyke and the Grim's ditches). Each section has a concise bibliography of books and articles suitable for further study. The first impression is already nearly exhausted.

# Reviews

SAILING SHIPS; their history and development as illustrated by the collection of ship-models in the Science Museum. Part I. Historical Notes. *By* G. S. LAIRD CLOWES. *Board of Education*, 1931. *pp.* 114, *with* 38 *plates and* 11 *text-figures*. 3*s*.

The great increase in the models of boats and ships at South Kensington and their scientific re-arrangement in the new galleries have rendered out of date the guide compiled by Sir George Holmes many years ago, and the first part of a descriptive handbook by the present Keeper is therefore most welcome. A brief note on the origin of the collection is followed by a summary of the sources of information by which the evolution of the sailing ship can be traced. It is emphasized that we are fortunate in still being able to see and handle many kinds of craft which represent stages in the development of the wooden ship, for the more backward races of mankind continue to employ their primitive artefacts ; the Australian aboriginal still crosses a stream astride of a log pointed at both ends ; certain Indian peoples navigate their rivers on two pots lashed up with bamboos ; reed-bundle canoes and dug-outs have even today a very wide distribution. The main theme being the evolution of the modern wooden sailing ship, there is first a detailed survey of the Eastern Mediterranean and its tributary waters, for here were built the early ships which many centuries later came to perfection after the far younger ship-culture of the Atlantic coasts came into continuous contact with them during the 14th century. The development from sea-going ships to such vessels as H.M.S. *Victory* and the China tea-clippers has proceeded without sudden changes in hull-construction and sail-plan. We are first told what is known of the ships of Mesopotamia, Phoenicia and the Aegean, and of the ancient Nilotic craft : the ship-cultures of all these countries contributed to that of classical Greece, whence was derived the larger and more seaworthy ship of the Roman domination.

Of the ships of Phoenicia and their descendants of Carthage it is unfortunately impossible to say much in view of the only direct representations being some coins and *graffiti*, but we would have welcomed more than the few lines given towards reconstructing the ships which ventured so far. The next chapter takes us to the North, with a reference to the *graffiti* which survive on the rocks of southern Sweden and other parts of Scandinavia and are usually ascribed to the Bronze Age, and which have been the subject of so much speculation, even to their not being boats at all but sledges, or even outrigger canoes, a kind of craft found nowhere in Europe.

In the burial-mound ships, commencing with the Nydam example of about A.D. 220, and those of the Viking Age found at Oseberg, Gokstad, and elsewhere, we possess a fund of information. Of these Mr Laird Clowes gives a summary which will enable the reader to appreciate clearly the essential differences in construction which separate them from Mediterranean ships, and to realize that the double-ended open craft which we call a 'whale-boat' and its relatives among fishing craft of Northern Europe are the lineal descendants of these Viking rowing-boats which set a square sail in favouring winds.

The English one-masted ship of the 11th to the 14th century owes much to the beautiful lines and proportions of the early northern ships, as we learn from the seals of certain coast towns, illustrations in MSS, and on painted glass, which show that English

and Baltic ships of the 12th and 13th centuries were essentially northern, the clinker-build as opposed to the carvel-build of the South being one of their outstanding features. The advent of the three-masted ship has very properly a chapter to itself, and the transition period of two masts, the question whether the early second mast of the North was stepped forward or aft of the 'great mast', and other cognate matter are summarized.

From this transition period, during which southern devices and fashions were developing their influence, we come to the reigns of Henry VII and VIII, distinguished by marked advance in size and improvements in hull and rigging. In ship design the reigns of Elizabeth and the Stuarts brought many improvements rather than fundamental changes. The 17th century, in Mr Laird Clowes' words, was ' a period in which, for the first time in the history of ships, we are able to speak with certainty of the exact dimensions of individual ships, of their precise appearance, and of the details of their fittings '. Towards this knowledge the builders' models of Stuart days are of inestimable service to us. The ' Establishments ' of the early 18th century introduced that great experiment in standardization with a rigidity which, though often disregarded, made us fall behind the French with their wider range of vision and three schools of ship-design when we maintained none. The Royal Navy had to fall back on copying prizes, but at last hard and bitter experience and the employment of better seasoned timber gave us the ships by which the great victories of the late 18th century were won. The last fifty years of the sailing ship and the evolution and decline of the clipper ship lead us through the main changes in hull and rig which culminated in such triumphs of naval architecture as our *Duke of Wellington* and the *Bretagne* of the French Navy in the 'fifties of last century, the tea and wool clippers of the next two decades, and the last deep-sea ship which can be called a type, the four-masted barque of the 'eighties.

Mr Laird Clowes does not forget that he is writing for the inexpert but interested visitor to the models, and his choice of illustrations is excellent. Here and there we would venture to suggest revision in a future edition. The vexed question of the origin of the lateen sail is hardly yet on a basis for the statement (p. 13) ' that there is every reason to suppose that the basal idea of a fore-and-aft sail was originally derived from the Pacific islanders '. That surviving inventories show that English ships carried guns as early as 1410–12 should be mentioned alongside the statement (p. 60) that guns were first *used* on shipboard in 1461. The seal of Louis de Bourbon of 1466 is given as the first dated representation of a northern three-master, in neglect of the miniature in a manuscript possessed by Lord Hastings and ascribed to not later than 1450 ; this portrays several three-masted ships of northern type. As the earliest record of a true stern-post rudder slung by pintles and gudgeons we are shown the seal of Elbing of 1242, but an equally modern-looking rudder is seen on the seal of Ipswich which there are grounds for believing was contemporary with the charter granted in 1200. This very early English example deserves mention. The numerous illustrations are excellent. Part II (published 1932, 2*s* 6*d*) of the handbook consists of a catalogue of the models, with very full descriptive notes. H. H. BRINDLEY.

LES SILEX DE BUDEL. *By* J. BUTTER. *Amsterdam : Buys & Zoon. pp.* 19 *and* 12 *pages of plans and line drawings. Price not stated.*

Before M. Butter began his researches no traces of Tardenoisian culture had been recorded from the Netherlands, a circumstance the more curious when we recall the magnificent work of Rahir and Lequeux in Belgium. It is satisfactory to know that

industries of this most interesting culture are being recovered from yet another area. In the present pamphlet two stations are described, both situated on land of the factory of the Société Anonyme des Zincs de la Campine, Brabant. The first of these appears to be of Neolithic date, having yielded a polished axe, leaf-arrowheads, a tanged arrowhead, and a few sherds of pottery showing fine quartzite mixture. It is interesting to note the presence on this floor of a considerable series of trapezes. The second station, situated at a kilometre's distance from the first, proved to be a chipping site. It lay immediately below the heather on sand. The most typical forms met with were non-geometric microlithic points, blunted down the whole of one side or else obliquely down part of one side, usually the left. There also occurred rather rarely types usually associated with the final Tardenoisian, as found at Zonhoven (upper level), including a trapeze, a concave-based triangular point, and a point with pressure-flaking. It is probable that these may be disregarded in assessing the industry as a whole, since, like the leaf arrowhead also found, they probably represent strays. A feature of the industry is the presence of the burin of upper Palaeolithic type (mostly of the angle variety) in very considerable numbers. The microburin is not mentioned either as occurring or as absent. This is a pity, as it provides a most useful index. A number of points of gravette character, in some cases well over two inches long, together with a broken point of ' pen-knife ' type, combine with the burins to suggest an upper Palaeolithic facies. Indeed M. Butter concludes that his second station shows a culture transitional from the final Magdalenian to the Mesolithic having some morphological relations with the final Aurignacian. The industry taken as a whole is certainly not of an evolved Tardenoisian character, though we regard it as definitely Mesolithic in age. How far it was influenced by the Tardenoisian at all it is difficult to say, since we are given no information on the type fossil of that culture. It seems probable that at any rate the basis of the Budel microlithic culture must be regarded as a development from the northern fringe of upper Palaeolithic culture. In this country we can show certain parallels from Lincolnshire in the West Keal and Sheffield Hill sites, and in the lowest level from Scunthorpe. J. G. D. Clark.

ROCK-PAINTINGS OF NORTH-WEST CÓRDOBA. *By* G. A. Gardner, *with the collaboration of* S. E. Gardner. *Oxford : Clarendon Press*, 1931. *pp.* xvi, 147, *with* 172 *text-figures*, 44 *plates* (28 in colour), *and* 3 *maps*. 84*s*.

Here is a book which cannot fail to interest the mind and rejoice the eye of anyone who cares for prehistory and the beginnings of art. It is an album of rock-paintings, recorded with the utmost accuracy obtainable by the use of camera, brush, pen and tracing-paper, guided by a scientific mind, and admirably reproduced in colour plates, half-tones and line-drawings. Whatever fresh light the years may bring—and one cannot hope for much—to the interpretation of the material, this collection of pictographs and petroglyphs is bound to remain a standard work of reference in its own field. The illustrations are mainly the work of Mrs Gardner, and both authors are to be heartily congratulated on a really fine achievement, which was also a labour of love carried out at no small personal sacrifice.

Over six years of intensive field-work were devoted to the study and copying of the paintings, which are situated in rock-shelters of the Córdoba hills in the Argentine. No systematic work had previously been attempted here, and only a few of the paintings had been copied before by Leopoldo Lugones, and reproduced by Félix F. Outes in his

monograph on the archaeology of Córdoba. One feels therefore that, in turning the pages of this handsome volume, one is being admitted to an entirely new province of primitive art, and one of very great interest. Its isolation lends it a peculiar value for the comparative student. For there can be no question here of influences or connexions with the better known cave-art of Europe, or of the South African Bushman.

It is all the more interesting to find the artistic instinct manifesting itself on parallel lines, in a technical sense, with that of the Bushman, *viz.*: in the form of incised or 'pecked' engravings on isolated boulders, and of paintings on the walls and roofs of rock-shelters. The natural environment was not dissimilar in the two cases. But the state of culture of the respective artists was very different. Unlike the Bushman, who was a hunter pure and simple, the Comechingons of Córdoba, to whom these paintings must be ascribed, were essentially a settled agricultural folk, and many of the figures depict domesticated animals such as the llama. For sheer naturalism and variety the hunters, at their best, must, we think, still be accorded pride of place. But the Córdoba artists attained to a high degree of realistic expression, and many of the figures have great individual beauty. There is also a large number of geometric and inexplicable symbols, to intrigue our interest and challenge speculation.

Unfortunately the Comechingons had been practically exterminated within 150 years of the first arrival of the Spaniards ; so that no final and authoritative solution of the picture-puzzles is perhaps possible today.

In date the majority of the paintings are almost certainly pre-Hispanic, that is, earlier than the 16th century ; superpositions, the state of preservation and other factors indicate a period of many centuries during which the art flourished before this. A limited number of figures of Europeans and equestrian figures proves that it was still alive, if decadent, at the time of Cabrera's expedition in 1572.

No definite sequence of styles or colour can be deduced from the superpositions of paintings, which do not follow any consistent arrangement. But the author gets the general impression that the geometric figures, which are generally red, mainly preceded those of animals, for which white is the colour more usually employed. In style the paintings are classified into six groups. Analyzed by subjects they fall naturally into three categories, *viz.* :—natural objects (men, animals, birds, insects, etc.), geometric designs (some of which may be astronomical, *e.g.*, the rayed circles), and incomprehensible figures. Nearly 70 per cent. belong to the first class, the remaining 30 per cent. being fairly evenly divided between the latter two groups. White, black, red and grey are the colours employed, and the figures are usually in monochrome, white being the commonest colour. There is a variety of techniques, among which one may note the ' spotting ' method, and, rarely, a ' negative ' style, in which the design is ' reserved ' in the natural colour of the rock and the background painted in.

The old problem of significance is impartially considered in chapter VI. No positive conclusion is reached, but in the cases where the paintings are placed in awkward and inaccessible positions, high up or under low ledges of rock, a magical or religious motive seems necessary to explain them. Some groups of figures, on the other hand, would seem to be commemorative of historical events. Mr Gardner wisely refrains from dogmatic verdicts. On one point only is he convinced—that they were done with a definite object and not merely to pass the time idly away. Nevertheless one may be permitted to wonder whether a purely artistic impulse, such as we know to have been deeply rooted in many branches of the American Indian race, was not seeking its natural expression without *arrière pensée* in at least some of these attractive pictures.

Chapters I-III contain a detailed description of the sites and paintings ; chapters IV–VI an analysis of style, technique, date, origin and significance. A very useful appendix of comparative material, a bibliography and an index complete this admirable volume. H. J. BRAUNHOLTZ.

WANDERINGS IN GREECE. *By* F. S. BURNELL. *Edward Arnold*, 1931. *pp.* 253 *and* 22 *illustrations.* 7*s* 6*d.*

This is a completely satisfactory handbook, learned, light and interesting. The author's practical information is up-to-date, his facts of travel sound, his style unwearying. He is in touch with the latest archaeological controversies and makes many of the show sights of Greece the more interesting by enveloping them in the mysterious clouds of learned dispute. Nor does he merely tell the reader of the all-too-well-known marvels at the expense of the minor wonders. For even on the most trodden tracks there are so many things that the ordinary guide forgets. How many tourists who tramp up the Acropolis or round Kerameikos look at the church of St. Demetrius the Bombardier or climb up the Mound of Sulla ? How few see the lovely spring of Kanathos near Nauplia, whose magic properties are now wasted on the sisters of a convent? No tourist to Greece should miss this excellent book. S. CASSON.

SCULPTURED PORTRAITS OF GREEK STATESMEN, WITH A SPECIAL STUDY OF ALEXANDER THE GREAT. *By* ELMER G. SUHR. *Baltimore : Johns Hopkins Press ; London : Humphrey Milford*, 1931. *pp.* 189 *and* 23 *figures.* 24*s.*

Almost all the extant ancient portraits which are not Roman copies are of men unknown or little known. Euthydemus of Bactria and Kotys of Thrace, men hardly known to history, survive in superb portrait-heads. But the great statesmen and the philosophers and generals have almost all come down to us in poor, sometimes appallingly bad, copies. To disentangle the identities of these copies of copies of portraits, to distinguish exactly how many versions of the head of Aeschylus or Euripides or Plato were made, is a task which can appeal only to an academic mind and an undaunted spirit.

Dr Elmer Suhr is possessed of both these qualities. His book is in effect the thesis which gave him his doctorate, and in its ingenuous outlook, its persistence in the pursuit of knowledge, and its unflagging study of the least interesting *minutiae*, it is characteristic of all such theses.

Frankly he has no new contribution of any kind to make to the present state of iconography, and in some respects he is even out of date, as, for instance, in his belief that Mausolus and Artemisia stood upon their chariot, or in his statement that clay models for stone-carving came in as late as Pasiteles (actually Pheidias and Paeonius must have used them).

But his book will be of some considerable use as a work of reference, for he has accumulated the facts with untiring diligence.

His pages are marred more by simplemindedness than by error. It is, for instance, startling (if gratifying) to read that the hideous apotropaic dance-masks from Sparta ' probably do not represent statesmen ', or to hear that ' Professor Robinson . . . and some other students of Macedonia now believe that a sort of Greek civilization started in Macedonia at least as early as 2000 B.C.'. No one would dispute these truisms, but few would venture to assert them thus ! S. CASSON.

THE ROYAL TOMBS AT DENDRA NEAR MIDEA. *By* Axel W. Persson. *Lund : C. W. K. Gleerup; London : Humphrey Milford*, 1931. *pp.* 152, 86 *figures and* 36 *plates* (4 in colour). 42*s*.

The results of these exceedingly important excavations of tombs on the site of the only major settlement of Mycenaean Argolis which has hitherto remained unexcavated contribute more to our knowledge of the Mycenaean mainland than any excavations of the last twenty years.

Dr Persson has indeed been fortunate. By finding an unrobbed Tholos tomb containing the burial of a king, a queen and a princess he has found more than the most sanguine excavator of the much dug Argolid could normally dream of discovering. But the very cause which had prevented robbers from seizing the treasure here described almost equally successfully operated in preventing Dr Persson from finding it also. For both the Swedish excavators and ancient treasure hunters who explored it as early as the 11th century B.C. had alike entered the Tholos tomb and found it empty. But Dr Persson, unlike his predecessors, was not to be baulked, and by digging beneath the plaster floor of the tomb discovered the burials where they had been so wisely hidden. He admits, however, that he was on the point of concluding the excavation of the empty tomb without searching beneath the plaster floor, had not the natural throughness of a trained archaeologist compelled him to examine the floor down to rock level.

The wealth of gold, silver and bronze vessels and ornaments found mark the burial as in every sense royal. The date of the latest burial, that of the king and queen, is fixed by the ceramic evidence at the first half of the 14th century B.C. But the excavators think that the tomb was built during the king's lifetime, for his use, and that the princess was buried first.

Out of so much wealth it is difficult to say which is the finest or the most important work of art, but it seems wisest to award the palm to the superb gold cup, already one of the most famous of Cretan works of art, found with the king's skeleton. The cup held by the queen, on the other hand, is less beautiful though of no less importance. Its design of bulls' heads in niello and gold and its mixture of metals—a gold interior and silver exterior—make this artistically unique and, from the point of view of metallurgy, of the deepest interest. There seems no question that it is Mainland work and not an importation from Crete. An ostrich-egg cup, found between the king and queen ; a large cup like those from Vaphio and with a similar embossed design of bulls, but differing from them in being of gold inside and of silver outside ; a silver goblet decorated with a hunting scene and some superb gems form the main prizes of the rest of the treasure.

Among the minor finds the most interesting are a group of finger-rings made of layers of mixed metals—silver, lead, copper and iron—which the author tentatively suggests were of magical value because of the electric current which the association of these metals can produce. Two leaden horns from a helmet and some particularly striking paste plaques also from helmets throw no little light on the panoply of the Mycenaean warrior.

In addition to the Royal tomb there were excavated a series of chamber-tombs, and the excavator's luck held here also. In one was found an enormous deposit of bronze vessels, consisting of no less than 35 objects in all. Another chamber-tomb proved to be a cenotaph, which the excavators think is perhaps that of a warrior who was killed in one of the mainland raids on Egypt in the 13th century.

Dr Persson is to be congratulated on a careful and most adequate publication of material which is as vital to our knowledge of the Mycenaean world as it is to our study of Homer. His apt references to the text of Homer show how much valuable illustration this excavation can afford to Homeric scholars.

It is perhaps to be the more regretted that some parts of the book are extremely hypothetical. The author's complete rejection without argument of Evans's recently expressed views on the Tholos tombs of Mycenae leads him to adopt alternative views about the mainland Tholoi which are no more and no less satisfactory.

His interpretation of two glass plaques as Europa and the Bull and Bellerophon and the Chimaera is extremely hazardous, and his argument from this interpretation that these myths can now be given a pre-Hellenic origin is consequently very risky. The plaques are so corroded that any firm identification of their design is speculative in the extreme.

The author is perhaps also a little too definite in his assumption of a Mainland expedition from the Argolid to Crete which was responsible for the destruction of Cretan power and the looting of Cretan wealth. There is much likelihood that something of the kind happened but no shred of evidence to prove that it did, and to argue from this speculative hypothesis that the ' Octopus Cup ' and many other clearly Cretan works of art in the Tholos tomb were loot brought back by the king of Midea is not the sort of argument which should appear in a scientific publication of this kind.

Apart from these flights of fancy the publication of these amazing finds is sound and of the deepest interest. The colour plates are admirable and the photographs in the main adequate. S. CASSON.

A CLUE TO THE CRETAN SCRIPTS. *By* F. MELIAN STAWELL. *Bell & Sons*, 1931. *pp.* 120, *and* 11 *figures.* 15*s.*

Attempts to decipher unknown scripts can only be of two kinds—those which are aided by hints from other and known contemporary languages, and those which use only the internal evidence of the scripts themselves. This attempt is of the latter type, and the second type of decipherment must always, in a sense, be *in vacuo*. For since there has not yet been found any single Minoan word written in any transcribable script of pre-Greek times Miss Stawell is driven unavoidably to guess at the language, which must for the moment be called Minoan. That language may be entirely unknown; on the other hand it may have affinity with some language spoken in the Aegean of which we have some knowledge. Miss Stawell boldly assumes that the language used for the Minoan scripts and pictographs was an early and simple form of Greek. This startling assumption she defends with well-reasoned and not wholly untenable arguments. She presumes a state of affairs in the Aegean in which Greek of a sort was spoken as early as 3000 B.C., and that it had come in with the Minoans from the northeast; these ' Minoan ' newcomers acted as a leaven upon the primitive inhabitants of Crete and the Aegean and produced the marvels of Cretan art. In other words she projects into a remote past a movement similar to that which introduced later the Achaean and Dorian dialects of Greece.

Once granted that the basis of the scripts is Greek the rest is easy. She translates the texts as fluently as her predecessors—Hempl and Kluge—in this unfruitful field. For, once you admit that a certain sign resembles a certain object and take several Greek words for the object which it seems to represent you can play about indefinitely with

alternatives until you get some sort of translation. The method simply cannot fail, and I have no doubt that if it were equally assumed that the basic language of the Minoan tablets and seals were German or Latin or Russian, that equally good or bad translations would ensue. In recent years the learned attempts made to establish that the opening lines of every Greek play contain in anagram a ' signature ', a ' chronogram ' and an ' ascription ', shows how a skilful scholar can juggle with his material. The ribald soon showed that you can get almost any anagram you like out of the opening lines of the plays, and one ingenious scholar even proved in this way, as a *reductio ad absurdum*, that the first lines of the ' Oedipus Tyrannus ' of Sophocles stated that the author of the play was Euripides ! So much for decipherment *in vacuo*.

But the archaeological facts are against Miss Stawell's assumption. There is no archaeological context for ' Greeks ' in the Aegean that can even with faint plausibility be placed earlier than 2000 B.C., and, even so, that context was far up in the Balkans.

But, once granted her Greek, Miss Stawell forges ahead and only when she identifies the actual seal-stone of Minos himself with his name in plain blunt characters will the acquiescent enthusiast feel that it is too good to be true.

I must confess that much of the introductory matter is sound. We are tempted to see too much un-Greek Minoan and too little Greek in these dark millennia before the Achaeans came. Miss Stawell shows, plausibly enough, that we are not fully justified in presuming a non-Greek and pre-Greek language which has survived into Greek with its -ssos and -nthos endings. While Fick's analysis of this evidence is sound enough, his assumption that it implies a pre-Greek language is after all but a hypothesis. But, against Miss Stawell, it can be shown that it is a hypothesis that works, while her hypothesis of early Greek in the Aegean will not accord with the archaeological evidence. Nor is she for a moment correct in saying that ' when the Minoan marvels were first discovered all scholars were struck by their likeness to the works of later Greece '. Scholars then, as now, saw mainly that a complete gulf of artistic outlook separated the two modes of art. Minoan art implied a certain outlook on life and artistic creation which was fundamentally different from that of Greece. Nor can any evidence be found satisfactorily to bridge that gulf. Minoan art implies a certain personality of the artists which predicates a different racial origin. The resemblances between the two modes of art are simply the resemblances which are inevitable when two vigorous and independent peoples are actively artistic in the same region—and, of course, certain methods of the earlier people were transmitted to the later if only because the whole Minoan race was not exterminated in the dark age that heralded the Iron Age into the Aegean. Miss Stawell will not get her Greek into the Minoan world that way.

But all that clear and persevering scholarship can do is done in this book, which is an intelligent and painstaking attempt to do the impossible. S. CASSON.

DIE FORM DER PALÄOLITHISCHEN GERÄTE. *By* F. HERIG *and* G. KRAFT. *Archiv für Anthropologie, band* XXII, 1932.

Of recent years several prehistorians have been undertaking a new kind of investigation of stone implements. This involves the careful measurement of the different types of tools occurring in the various cultures—length, breadth, thickness, weight, etc. It is hoped that as a result a new classification will be found possible. Friedrich Herig is an engineer who has brought his exact training to bear in this way on the Magdalenian industry found at Petersfels, and he has produced an impressive piece of work. He

classifies all stone tools into 4 groups : gravers, borers, scrapers, coups de poing or daggers, since these are each used in different ways, and require different positions of the hand to hold them. Thus today we hold a pencil differently to an awl, and a scraper differently to a dagger. It will be noted that the author is even more interested in the holding-edge of a tool than in the actual working-edge—a point of view which perhaps can lead to error since the hand is a very adaptable organ. Using this fourfold classification the Petersfels industry is carefully examined. Also the proportion in which each type occurs is noted. Naturally little immediate result seems to follow; what is needed is that similar work should be done in the case of other finds both of the same and different ages, and then perhaps useful comparisons will become possible.

G. Kraft continues with a general article on the shapes of palaeolithic tools. He discusses form and material, secondary working and function ; also pure form. He seems to see in the shaping of stone tools of different ages not merely utilitarian reasons but also the growth of true aesthetic feeling in Mankind.

These special studies of prehistoric tools are still in their infancy ; much more work will be necessary at other sites before it can be affirmed that really important results accrue. Such articles as the above, therefore, are to be welcomed. M. C. Burkitt.

KULTURSTROMUNGEN IN EUROPA ZUR STEINZEIT. *By* G. Rosenberg. *Copenhagen : Andr. Fred. Host & Son*, 1931. *pp.* 176, *and* 357 *figures*. 5 *kr*.

It may be said at once that no student of early British pottery can afford to be without Rosenberg's study of the origin and spread of cord and thread impression as a means of ceramic decoration. One may go further by commending the work to anyone interested in the phenomena of the genesis and development of decorative technique in whatever field. For Rosenberg has unfolded his evidence in such a way as to give us a most intimate insight into the processes at work in the formation of a special technique and its multifarious varieties. Here, as in so many cases, the strictly rational explanation of a cultural phenomenon has proved to be the false one. The theory which sought to explain the cord and thread ornamentation of pottery as the result of using cords and threads for the support of vessels when drying, while as a matter of fact it has certain physical objections, has received a certain amount of support from those easily fascinated by explanations of a deterministic character. The Ussatova find, however, has confirmed Sophus Müller's view that cord and thread ornamentation must be connected with women's needlework. It was not a physical accident but a human whim that gave rise to the new system of ceramic decoration. The two sherds illustrated by figs. 34 and 36 show beyond all doubt the impressions of neck-bands of plaited threads, which can be easily reconstituted (figs. 35, 37). Clearly the woman potter has placed her own neck-band around the neck of her pot, the child of her hands. It is amusing to note in this connexion that a clay idol from Tripolje (38) has a neck-band depicted by twisted thread impressions.

If the impression of these neck-bands inaugurated a new system of ceramic decoration, it is equally certain that it inspired the earliest motives of the new style. Thus in the links of the double plaited chain (35) we see the prototype of the crescentic ' maggots ' made by impressing a loop of twisted thread with a finger of the right hand, while the tassels of 37 explain the decorative fringe to be seen on such sherds as 39. A special form of pendent decoration, consisting of a line of arcs or scallops, which occurs rarely in South Russia (74, 139), but commonly in East Prussia and Denmark (274–6 and 311–5),

was probably inspired in a similar manner. As usual, however, the origin of the decoration was soon forgotten and even at Ussatova itself, the cradle of the style, we find single elements employed in the formations of new patterns regardless of their earlier significance. In the same way we note a tendency for the zone of decoration to extend from a narrow band round the neck of the pot until eventually the whole pot is covered. Both these processes become accentuated as the style becomes more removed from its source in time and space. Thus, already at Aleschki-Kinburg near the mouth of the Dnieper, we note the marked popularity of the ' winkel ' pattern, formed by two or more rows of oblique ' maggot ' impressions, each row forming an obtuse angle with its neighbour (85). We also note the introduction of a hard core in place of the finger for impressing the thread, causing straight in place of crescentic ' maggots ' (89) though the more primitive method extended over the whole area of diffusion to the British Isles. At Pluti, near Kiev, more than 500 miles upstream, the ' winkel ' pattern was also much favoured, though here we note that it was commonly executed with the edge of a mussel shell, either plain (148–53) or serrated (154–5). Moreover, as sherd 163 demonstrates, the potters of Pluti sometimes carried their decorative patterns over the whole surface of the pot down to the very base. Perhaps the most interesting point to be noted, however, is the use of the comb (154–5) in the execution of a pattern originating in the cord and thread area of South Russia, and also the association of pits and ' maggots ' on the same sherd (142–3). This points to the intimate relationship which existed between the thread and cord province of South Russia and the great comb pottery province of the North. At Ussatova itself we find perforation decoration on the same sherd as crescentic ' maggots ' of the earliest form (69). It is of domestic interest to point out that in Britain we find the same pit-motive so characteristic of comb ware on pottery of the Neolithic period of the Peterborough class, on which ' maggot ' is very frequent, *e.g.*, the Wandsworth pot sherds from Peterborough (*Archaeologia*, LXIX, figs. 9–10), a sherd from the Thames (London Museum, A 13667), and sherds from the West Kennet long barrow (nos. 77 and 80 of Mrs Cunnington's compilation). The system of ceramic decoration which thus developed in the Ukraine spread up the Dnieper to the East Baltic coastlands and Finland on the one hand, and via East Prussia, Bornholm and South Sweden to Denmark, finally to reach the British Isles. The connexion of our Peterborough ware with the Baltic was first noticed by Mr Reginald A. Smith, and has more recently been amplified by Professor Childe in a notable communication to the Royal Archaeological Institute. If readers of ANTIQUITY wish to appreciate an important class of the Neolithic pottery of their own country they cannot do better than buy Rosenberg's inexpensive work. It is hoped that with the aid of the brief summary here presented and the excellent photographs available in the book those without German may be able to obtain most of the important information they require. If one may be permitted to make one criticism it is that there is no map. The inclusion of a good map, indicating the type-sites and judiciously hachured, would we think have brought into relief the amazing area of diffusion of the thread and cord system, stretching as it does from the Kuban to the British Isles and from Bessarabia to Finland. It might further have been utilized to indicate graphically the culture-contacts made by the province along its peripheries. A greater appreciation of space-distribution as a factor of equal importance with time-distribution would have spared him a certain puzzlement over the relation of his group to the painted pottery of the Black Earth region. At Ussatova itself the arrival of painted pottery appears to have post-dated the earliest phase of the thread impressed wares, while at Kiev the thread impressed pottery antedates almost

completely the arrival of the painted ware. Rosenberg is puzzled that at Cucuteni the thread impressed ware is stratigraphically later than the earlier phases of the painted pottery. We can only point out that, whereas at Ussatova and Kiev we have to deal with peripheral intrusions of painted ware into the heart of the thread impressed zone, at Cucuteni we have to envisage an exactly opposite state of affairs. That the time-relation of the two wares should differ as between, for instance, Kiev and Cucuteni, is only to be expected. All of which goes to show that stratigraphy by itself is a very dangerous method establishing a time-relationship between two cultures, unless it is checked by a study of geographical distribution. Time-sequence, in fact, can only be established by a study of distribution in both its vertical *and* its horizontal aspects.

J. G. D. CLARK.

ROMAN BRITAIN. *By* R. G. COLLINGWOOD. *Oxford : Clarendon Press*, 1932. *pp.* XII, 160, *with* 59 *figures and map*. 6*s*.

The text of this book originally appeared in the *World's Manual* series. It has now been carefully rewritten and amplified, gaining in limpidity and force and becoming considerably enriched by new ideas. Among illustrations, the 52 blocks of the older book have been replaced by 59, of which 25 are quite new and a vast improvement upon those which they replace. Others, again, have been redrawn and enlarged, and all are printed upon much better paper. Readers new to the subject will also be grateful for the amplified bibliographical appendix. No one who possesses the older version need think that it will suffice in comparison with the new : for the text has been changed in tone as much as the illustrations ; and if we were gladdened by the original work, how much more may we not bid this one welcome and good speed. I. A. RICHMOND.

THE ROMANS IN BRITAIN : an anthology of inscriptions with translations and a running commentary. *By* A. R. BURN. *Oxford : Basil Blackwell. pp.* 228, *with* 4 *plates*. 6*s*.

This admirably-written textbook will be of the greatest use to schoolboys and other young students for whom it is meant, since it will teach them much and inspire them to learn more ; proceeding, we hope, from Britain to the Empire at large. Criticism confines itself to minor points but, in view of the second edition which we hope the book may have, we mention the following. The Claudian triumphal inscription is now in Palazzo Barberini, Rome. *Speculatores* of Legion II cannot be taken in relation to the course of its earliest campaigns with safety. The Chichester inscription is not *from* Goodwood Park, but now happens to be *in* it. The Castleshaw tile reads COHIIIBRE and connects with Slack, not Manchester ; nor is it related to successive occupation of the two places. Among successful naval operations on the West Coast please mention Demetrius's adventurous voyage. It is high time that this got into our textbooks, for while Demetrius was a teacher, no one says that he taught in Britain, and we *do* know that he accompanied an Imperial Expedition of Inquiry and Exploration to the Scottish Isles ; further, if the York inscriptions be his, the vow to Oceanus and Thetis should refer to that adventure (see Dessau, *Hermes*, XLVI, 156), not to the humdrum channel-crossing. Again, in connexion with York, Trajan's twelfth tribunician power does not run on into A.D. 110. In the same period, Mr Burn's account of the Trajanic disaster is over-precise, while that of the building of Hadrian's Wall might well be amplified. Finally, is there any proof that the Derbyshire mines were administered from Anavio ?

But these are relatively small matters, and we welcome the book and commend it to all sixth-forms and to many others who are beyond that stage. To their bibliography, however, we beg readers to add the annual summary of Romano-British discoveries of the *Journal of Roman Studies*, which ANTIQUITY does not attempt to emulate.

I. A. RICHMOND.

THE ACROPOLIS. *Photographed by* WALTER HEGE, *described by* GERHARDT RODENWALDT. *Oxford: Basil Blackwell. pp.* 61, *with* 37 *text-figures and* 104 *plates.* 37*s* 6*d.*

Many picture books of places and things merely irritate by their text and misinterpret by their illustrations, which, all too often, illustrate only the virtuosity of the photographer. Nothing can lie so blandly as a camera if the intention of the photographer is the merely picturesque or impressionistic. But recent developments of photography under the influence of modern filmwork has at last convinced photographers that the camera must no longer be considered merely as a rival to the artist. It has a technique and a sphere that belong to it and to nothing else.

Herr Hege has as fully realized this, as has Dr Rodenwaldt that a text should illuminate in the manner of literature, and not serve merely to enable the reader's eye to seek rest from drama in pious commentary. I know of no book where the balance is so well kept between the illustrations and the reading matter. After Dr Rodenwaldt's brilliant introduction—which might well serve as a model introduction for all time to a work on Greek art—one accepts the lovely photographs as part and parcel of a combined study of a great shrine by two men who come as near to understanding what that shrine meant to ancient Greeks as it is possible for modern men to do. Dr Rodenwaldt's critical and explanatory descriptions of the Parthenon frieze, of the Propylaea and of the Erechtheium give the non-specialist reader an immediate insight into the heart of the subject. His simple but sensitive account exceeds in merit all the conventional textbook descriptions of the archaeologists' handbooks. He has the merit of brevity and comprehension not only of the achievements but also of the aims of the artists of Periclean Athens. And that makes the much over-written monuments of the Acropolis take on a new lease of life—a service long needed, for they have for too long been tarnished by volumes of mediocre appreciation and unwanted description. Here for the usual word-pictures of the Professors we have the photographs of Herr Hege, which speak for themselves. What Herr Hege cannot provide Dr Rodenwaldt gives us.

So many recent photographs of the Acropolis have been taken solely for the purpose of dramatic effect. We must admit at once that the Acropolis cannot help being dramatic from some points of view. Certainly the Greeks intended it to be so. But what is dramatic to us today was not drama to them and the aspects which we so often get in modern photographs of the Acropolis would have gone counter to their taste. Herr Hege's finest work is on quiet themes that reveal Athens in its normal mood. Nos. 3 and 5 show us the Acropolis from a distance without the *bravura* of a Dodwell engraving, and free of the thunderstorm background so dear to the picture-postcard maker. The camera in these views is working honestly as a camera and not as a drop scene at the Lyceum. No. 16 shows us not only a lovely view along the peristyle of the Parthenon but also gives us simply and without emphasis a view of the main refinement of the building—the curvature of the main floor. No. 22 is an admirable view of one of the metopes now in place, a feat of difficult photography, for how it was taken I do

not know. So too with no. 25, a view of the frieze. No. 73, the Nike temple frieze, is in the same class. All the plates reproduce the clarity and precision of the architecture and sculpture.

A few misprints that have crept into the translation call for revision. ' Peisistratides ', ' Mycaenian ' and, more serious a fault, ' Aegean ' (for Aeginetan) must be eliminated in a new edition. The only disappointment is the choice of the slabs of the Nike balustrade. Herr Hege has omitted the most beautiful.

But these are very small defects. The book is a wholly admirable production and one which every lecture-ridden tourist to Greece and every classical scholar should possess, if only to serve as an antidote to the heavy matter that he has for so long absorbed.

S. CASSON.

NORDISK KULTUR. Vol. IX. A. Folkevisor. *Edited by* Prof. KNUT LIESTØL. B. Folksagner och folksagor. *Edited by* Dr C. W. v. SYDOW. *pp.* 294 *and* 8 *plates.*

Volume XXVII. Kunst. *Edited by* HAAKON SHETELIG. *Stockholm : Albert Bonniers; Oslo : H. Aschehoug; Copenhagen : J. H. Schultz. pp.* 466, *numerous illustrations. Prices not stated.*

The two splendid volumes before us form a small part of a cooperative work on Nordic Culture, running into some 30 volumes. Every phase of the life of the northern peoples of Denmark, Norway, Sweden, Finland and Iceland, their habitat, physical characteristics, social structure, and material and spiritual culture, is covered by the series, each volume of which is edited by a Scandinavian scholar of distinction. Furthermore each separate contribution is made by an acknowledged expert under the general direction of the editor for the volume. By this method the whole ground is covered without serious overlaps or omissions and in a thoroughly authoritative manner. The illustrations are numerous and good ; paper and printing are first-rate. We should be grateful to the Clara Lachmanns Fund which alone made such a work practicable. The Scandinavian countries may be industrially ' poor ', but culturally speaking, having regard to their resources, their performance far outstrips that of many richer and more powerful states.

The volume on Art is divided into three parts : prehistoric, medieval and folk, of which the first is the longest. In the first J. Bøe gives an account of the naturalistic art of the Stone Age as seen in rock-engravings, paintings and sculptured figures ; C. A. Nordman deals with the handwork of the Stone Age as revealed in pottery and flint and stone implements, and later with Nordic ornament in the Finnish Iron Age ; J. Brøndsted deals with the decorative patterns and forms of the Bronze Age, as well as with the art of the Celtic and Roman period and the art style of the Migration Period ; Gunnar Ekholm gives a good account of the famous rock-engravings of the Bronze Age ; the Early Viking period is treated by Jan Petersen and the Later by Sune Lindquist, while Prof. Shetelig himself contributes an article on foreign influences in the Scandinavian art of the Iron Age. Medieval architecture, sculpture, wall-painting and textile fabrics of Denmark, Norway, Sweden, Finland and Iceland are described separately. Finally the furniture, utensils and textiles of the Folk are dealt with. The Folk culture of Scandinavia is still strong in remote areas, and its influence is seen among the sophisticated population of the cities, contributing a traditional flavour even to the finest achievements of modern art such as the city hall of Stockholm. Visitors to the recent exhibition

of Swedish art in London will remember the happy marriage of the modern and the very old that is so pleasing a feature of contemporary art in Scandinavia. The volume on folk-songs and stories does not directly concern readers of ANTIQUITY.

J. G. D. CLARK.

THE ALPHABET: ITS RISE AND DEVELOPMENT FROM THE SINAI INSCRIPTIONS. *By* MARTIN SPRENGLING. *University of Chicago Press*, 1931. *pp.* 71, 4 *plates.* $1.

There have been many studies of the strange alphabetic writing which occurs on the rocks at the temple of Serabit in Sinai. The most ambitious was by Grimme, who imparted a meaning to the natural cracks, and produced sensational readings about Moses and Hatshepsut. Cowley came to the conclusion that many lines referred to a body of Arab workmen called after the Negeb region. Gardiner and Leibovitch looked on them more cautiously. Now Prof. Sprengling has made a fresh study, and gives consistent readings throughout the series of sixteen scrawls, mostly fragmentary. He recognizes truly that the original script must have been cursive pen work, by its curved forms. Curiously, though most readers give *tnt* for a group on a bust, and on other stones, they have not proposed to take this as Tanit, the name of the Punic goddess who was identified with Astarte, therefore=Hathor the goddess of this temple. The soft sandstone weathers and breaks readily, and the condition of this writing in most instances leaves only short groups.

The translator's progress leads him to launch into a 'Story of the Alphabet', attempting to show how the Phoenician was developed from the Sinai script. Not half the signs can agree with this, and he has overlooked that nearly all the Phoenician signs were already in use in Egypt as far back as the 1st dynasty, part of the larger series of the Mediterranean signary. The Sinai writing is probably a variant of the Phoenician series, and apparently an invention of the Sinaitic workmen. FLINDERS PETRIE.

MEDIEVAL SCULPTURE IN FRANCE. *By* ARTHUR GARDNER, F.S.A. *Cambridge University Press*, 1931. *pp.* XIX, 492, *with* 498 *illustrations*, 113 *plates.* 73*s* 6*d.*

As the author of this magnificent book states in his preface, he is concerned with medieval sculpture in France rather than with French sculpture, and so his work has arbitrary geographical limitations; but to the ordinary traveller who is obliged to confine his voyaging to one or another country at a time, this is an added convenience and recommendation.

The book deals shortly, but sufficiently, with the historical events that led to the great developments in medieval sculpture, to the Renaissance which culminated in the magnificent Romanesque work of the 11th and 12th centuries, to the growing fineness of the transitional work leading to the glory of the 13th century, and the change from architectural to more purely sculptors' sculpture during the Flamboyant period. These sections are of great general interest, but the main part of the text is taken up with a consideration of the characteristics of the different regional schools of sculpture, and with a detailed description of the sculpture itself. Here the author shows a sureness of identification, and a conversance with the style and individual characteristics of the work that can only have come from the most intimate and minute study of the originals.

When it is added that the index of places contains some 380 names, and that in many cases several buildings were visited at the same place, the amount of devoted labour that has gone to the compilation of the book can be imagined. In spite of the mass of detail that it contains the easy style and occasional humorous touches make it very readable.

The origins of much of the earlier figure-sculpture in ivories, metal-work and, above all, illuminated manuscripts is very fully brought out ; and as we follow Mr Gardner through the five great centres of Romanesque building in the south of France—Languedoc, Burgundy, Aquitaine, the Auvergne and Provence—we cannot help feeling that his heart is more bound up in them even than in the great cathedrals of the north. And we shall be the last to blame him. It is difficult to think of any French church containing important sculpture which is omitted from either the text or the supplementary lists at the end of the chapters.

The book is illustrated throughout by photographs. Most of them are from the author's own camera, and they are generally excellent, while their reproduction leaves nothing to be desired. Naturally, all are not of equal value, but all photographers know how difficult it is when visiting places for a short time to obtain conditions that are most favourable for different situations. If it had been possible to vary the illustrations by the use of a few line drawings it might have helped occasionally in the elucidation of certain points. But there is little to cavil at in this great volume, and the reader is left feeling how much he has missed in the past, and how much greater in the future will be his appreciation of this most human art. DINA PORTWAY DOBSON.

DIE GERMANISCHEN GRIFFZUNGENSCHWERTER (RÖMISCH–GERMANISCHE FORSCHUNGEN, band 5). *By* ERNST SPROCKHOFF. *Berlin: Walter de Gruyter*, 1931. *pp.* 117 *and* 32 *plates.*

The wide distribution of the flange-hilted sword is the most arresting feature of the late Bronze Age in Europe, and the origin and significance of the type have attracted the attention of many archaeologists. Its apparent rapid spread, from Britain to Greece and from Spain to Sweden, has contributed not a little to the difficulty of establishing its place of origin. Competent British students have given the peoples of central Europe the credit for its invention, but it may be recalled that Naue and Müller favoured Italy whereas Undset favoured Egypt as its land of origin. More recently, Reinecke has argued for an Aegean origin, while Remouchamps has even sought aid from the Hittites. Still another school has used the sword in defence of the 'Germanic' (West Baltic) culture-province. The present monograph is a careful and detailed study of the flange-hilted swords of that important area.

It must be said at once that Sprockhoff is no quixotic champion of Germanic independence. He is, it is true, impressed with the importance of the West Baltic province, and complains that Naue did not appreciate its wealth ; but these are proper sentiments for the regional worker to hold. Though he believes with Kossinna that the rivetless flange-hilted sword is a product of 'Germanic' inventiveness—and most will agree that it is a very early type—he is not concerned to fight about origins. His work, in fact, is a study of regional classification, distribution and relative chronology.

Although flange-hilted cut-and-thrust swords are surprisingly uniform in general plan from one end of Europe to the other, no detailed system of classification yet proposed

has met with universal approval: Sprockhoff advances still another. He places the swords of his province into three groups in chronological sequence—older, common and younger varieties—and subdivides each group typologically. One feels grateful to him for avoiding the use of alphabetical labels to give his types an artificial air of permanence.

The older swords are two in type: the familiar one with curved rivetless tang and rounded shoulders, and the rarer straight-tanged form with sloping shoulders: the former is claimed to be indigenous whereas the latter is admittedly central European. They are both dated to Montelius II (Reinecke C). Of the common types of sword (Naue II) the Germanic province has yielded over 350 examples, mostly of Montelius III (Reinecke D). A fixed date for this period is provided by the well-known sword of Seti II (*c.* 1200). Some would place the period on the whole before, some after, this date. Sprockhoff, following Müller, is inclined to lower the absolute chronology, *i.e.*, he would commence the common-sword phase towards 1200. One reason for this lies in his conviction that period IV is neither so long nor so important as Montelius estimated. It is interesting to observe that this criticism parallels that made for British chronology by Dr Cyril Fox.

A narrow tang is the main distinguishing mark of the younger (*i.e.*, later) bronze swords. The shoulders are usually rounded once more (a sign of old age this time) and the blade is broad and long, with a bold mid-rib outlined by parallel lines. This sword is derived from the common form under the influence of South Germany. It has certain features in common with British swords of the type of Beachy Head, an example of which is given from Hannover. Other instances of bronzes of British or North French workmanship found in North Germany are cited. Swords of central European origin are considered in a brief section, and this leads on to an account of Hallstatt forms in bronze and iron.

Next follows an exhaustive inventory of every variety of flange-hilted sword found in the west-Baltic province: there are over 700 entries. But of still greater value are the distribution maps, six in number, very clearly executed and wisely confining themselves to single sword-types. On the basis of these excellent maps much interesting work remains to be done: the text does little more than draw attention to the sharply limited extent of the culture-province and to the way in which it spread southeast between Elbe and Oder as the Bronze Age advanced. The 25 plates of swords and associated objects also deserve our warmest praise.

One point that emerges clearly is the rarity of the 'leaf-shaped' or expanding blade in Germanic swords of the flange-hilted variety. It is time this confusing label was abandoned. To the reviewer, Sprockhoff appears to place too much reliance on pure typology: for example in his allocation of swords with slotted hafts or with hilt-projections to special types. But it must be remembered that he is dealing with a restricted area, and we could heartily wish for more regional monographs as thorough as this.

ESTYN EVANS.

ART IN THE LIFE OF MANKIND: a Survey of its Achievements from the earliest Times. III. Greek Art and its Influence. IV. Roman Art and its Influence. *By* ALLEN W. SEABY. *Batsford. pp.* VIII, 110; VIII, 110, *and illustrations.* 5*s* each.

This volume on Greek Art is written from rather a new point of view. The author possesses, besides a sound historical background, technical artistic knowledge, which enables him to view the art of the Greeks from the standpoint of the craftsman as well

as the connoisseur. As a result the various problems of artistic development are treated with a simplicity and reality that is specially suitable in a small and elementary, and at the same time, extremely comprehensive work. Besides the inevitable subjects such as Greek architecture, sculpture and vases, the book contains useful sections devoted to jewellery, cameos and coinage which add materially to its usefulness. The illustrations are excellent.

In his *Roman Art* Professor Seaby has contrived to set forth a vast amount of information. Beginning with pre-Roman art in Italy he touches on the work of the Villanovans and Etruscans, mentions the more characteristic Roman buildings and smaller objects, includes a few notes on Roman Britain, and then sets out to trace the influence of Roman Art and the art handed on by means of the Roman organization, taken in its widest sense, to the younger peoples of the West. The Sassanian dynasty is included, and also Coptic art, and so we are led to the stone crosses of Northumbria.

It is doubtful whether the genesis of these northern patterns is as simple as the author would have us believe, but in a small volume there is not much space for speculation, and it is a pleasure to come upon a book written so definitely from the evolutionary standpoint. The illustrations are numerous, and are composed of photographs and many beautiful and informative sketches by the author.

On page 6 the Second Crusade is made responsible for the sin of the Fourth, in sacking Constantinople, but such slips are rare, and the book should be very useful to all who are interested in the genesis of Western Art. DINA PORTWAY DOBSON.

THE HISTORY AND ANTIQUITIES OF THE SCUNTHORPE AND FRODINGHAM DISTRICT. *By* HAROLD E. DUDLEY *with chapters by* GEORGE R. WALSHAW. *Scunthorpe: W. H. and C. H. Caldicott*, 1931. *pp.* XVI, 247, *with* 64 *illustrations*. 7*s* 6*d*.

This book is the first attempt to collect all the information about the interesting region in the northwest corner of Lincolnshire round the new iron-smelting town of Scunthorpe since Andrew published his *History of Winterton* in 1836. Seventy-one pages are devoted to archaeology and the rest to a series of chapters on local life in medieval and modern times, including a description of the remarkable rise of Scunthorpe from a hamlet to a town of 30,000 inhabitants since the discovery of the ironstone in the 'sixties.

The most important feature of the prehistory of the district is the occurrence of the richest pygmy flint-site in England on the sandy warren to the east of Scunthorpe town. Mr A. Leslie Armstrong regards this as the type station of the Tardenoisian in England. The site continued to be occupied through all the succeeding periods down to the close of the Roman occupation, and after the Tardenoisian settlement the most interesting belongs to the early Bronze Age, which has left numerous hearth-sites on the peaty floor of the Warren, with much beaker pottery, many flints, and a few of the bronze implements peculiar to this phase of the Bronze Age. The whole of the Bronze Age is well represented in the finds which have been made round Scunthorpe, and the occupation of this neighbourhood was far denser than that of any other part of the county at this time. The reason for this is not far to seek, for the dry, lofty situation overlooking the marshes of the Trent and close to the Humber, one of the great water gates of eastern Britain, makes it ideal for settlement.

Mr Dudley deals with the Iron Age, which is not well represented round Scunthorpe

any more than in the rest of Lincolnshire. Now that some intensive work is being done on the archaeology of the county Iron Age relics are beginning to turn up more frequently, but they remain uncommon, and that Scunthorpe should have so little to show is remarkable, since it lies at the north end of the Lincoln Edge, which has been held by Dr Cyril Fox to have been the probable main line of communication at this time between the East Yorkshire region and the South and West of England via the oolite ridges.

It is in the Roman period that the Scunthorpe area again proves rich in finds. These, as well as many others of earlier and later date, are due to the complete removal of all the surface soil which takes place in the iron mines. The method is not ideal for scientific excavation, but it reveals everything, even though the objects fall from the hopper of a steam excavator as it swings round to deposit its load in the waiting trucks. The thickest concentration of Roman material has been found along the base of the cliff from below Winterton Hill to Thealby, and the most interesting fact which emerges from the study of these remains is that some iron smelting here in Roman times seems certain.

At Scunthorpe this work was carried on near Bagmoor, but scoriae probably belonging to the Roman period have been found as far south as the neighbourhood of Scawby several miles away.

The rest of the book contains a record of the district's medieval and modern history, to which Mr Walshaw has made some valuable contributions. The process of the rise of a new industrial community out in the country in the later 19th century makes instructive if cautionary reading.

Mr Dudley has wisely confined himself to presenting a record of the facts about the Scunthorpe district and has refrained from making more than tentative deductions from them. It is clear that there is much more to be found, and his caution is to be commended. The book is very successful within its chosen sphere, and breaks the long silence which has prevailed over the archaeology and topography of Lincolnshire.

One serious defect exists—there is no map, and while this would be a regrettable feature in any book dealing with a district, it is especially so here where there is much detailed description of topography.

The illustrations are good, but is not the sword from Flixborough shown on page 114 medieval rather than 17th century in date? C. W. PHILLIPS.

A CATALOGUE OF THE GREEK VASES IN THE ROYAL ONTARIO MUSEUM OF ARCHAEOLOGY, TORONTO. *By* DAVID M. ROBINSON, Professor of Archaeology in the Johns Hopkins University, *and* the late CORNELIA G. HARCUM, formerly keeper of the classical collection in the Royal Ontario Museum. *Vol.* I, *texts and drawings, pp.* VI, 288; *vol.* II, *plates. Toronto University Press*, 1930.

This is a descriptive catalogue of the Greek vases, and the Etruscan or Italic vases showing Greek influence, contained in the fine collection of the Ontario Museum. The mere cataloguing and classification is a good piece of work, which required years of careful attention; but the great value of the book lies in the careful and accurate descriptions, for the illustration of which Professor Robinson has visited the chief museums in Europe and America in search of parallels. Mr J. H. Iliffe, the present keeper, has edited the book as a whole, and added an appendix of recent acquisitions, and proposes to keep it up-to-date by notes from time to time in the Museum *Bulletin*. The second volume contains 118 excellent plates, every figure in which has numbers referring to the catalogue, and to the accessions list. The advantage, to the reader, of having the plates separate is obvious. J. F. DOBSON.

EXCAVATIONS AT KISH : Oxford Field-Museum Expedition. Vol. III. 1925–7. *By* L. CH. WATELIN, with notes and selection of contracts by S. LANGDON. *Paris : Geuthner*, 1930. *pp.* 20, *plates* I–XVI.

THE FIELD MUSEUM—OXFORD UNIVERSITY EXPEDITION TO KISH, MESOPOTAMIA, 1923–29. *By* HENRY FIELD. Leaflet 28 of the Field Museum of Natural History. *Chicago*, 1929. *pp.* 34, *plates* I–XIV.

THE EXCAVATIONS AT KISH. [Report of a Lecture by Prof. S. LANGDON given to an unnamed Society after the seventh season's work. Reprint, *pp.* 291–300].

EXCAVATIONS AT KISH 1928–9. [Report of a Lecture by Prof. S. LANGDON, given to the Royal Asiatic Society, 12 Dec. 1929. Reprint from *J.R.A.S.*, 1930, *pp.* 601–10, *with plates* VII–XI].

The ancient sites at Kish must be almost as difficult to reconstruct as is the narrative of the excavation. Vol. I left off in the middle of an account of the Sumerian Palace on ' Mound A ', and of the buildings on ' Mound W '. Vol. II is not yet published. Vol. III describes the large Neo-Babylonian temple Ehursagkalamma on the mound called Ingharra, which resembles temples already known at Babylon and Borsippa. This temple was constructed with complete disregard of older monuments adjacent, and was under repair when the kingdom of Nabonidus fell. It yielded very few portable objects, and no inscriptions except on the bricks. As earlier remains have been discovered beneath the massive brick platform on which it stands, it is to be entirely destroyed, and ' will be preserved for future generations only in the pages and plates of this volume '. The inscriptions published in the same volume do not seem to have anything to do with it.

From Professor Langdon's lectures we learn that he thinks he has terra-cotta figures of horses as early as 3500–3000 B.C., and ' the word for horse ' in Sumerian pictographic tablets from Jemdet-Nasr as early as 4000 B.C. (p. 295). He dates his great ' flood ' deposit about 3300–3000 B.C., but though it devastated Kish it did not reach Jemdet-Nasr, 17 miles away, owing to the greater concavity of the valley in those days (p. 296). The predominantly longheaded people from graves about 3000–2800 B.C. are thought to succeed to predominantly broadheaded about 4000 B.C. : but even the earliest graves hitherto found are of mixed folk. It is not clear what he means by saying (p. 298) that ' the Sumerians perished utterly at the end of the third millennium B.C. ', and he gives an odd account (p. 299, 610) of a terra-cotta head (figured JRAI, 1930, 2, IX, 5) from one of the later levels. By assiduous pumping, excavation has now reached virgin soil, six feet below the earliest ' painted-ware ', which was preceded by ' only stone and flint implements '.

In JRAS, 1930, pl. VII, we have at least a diagrammatic section by Mr Penniman of early deposits under the temple Hursag Kalamma ; it emphasizes the contrast of cultures before and after the ' flood ' deposit, which is here dated 3400–3200 B.C. The ' red-stratum ' immediately above it looks like a deliberate attempt to raise the site above such risks from flood.

From these fragmentary jottings we turn to W. Field's quite popular but intelligible summary of the whole enterprise, with photographs of the early chariot-wheels, the rein-ring surmounted (as at Ur) by a well modelled ass, the fine copper ' rush-light ' or cresset, the vigorous victory-relief, and typical tablets and pottery. Some idea is given of the methods of excavation, with rather large numbers of workmen, and rather

small expert staff, too often replaced by novices. The man on the spot must of course use his discretion ; but the reviewer at home is inclined to ask why it was necessary to remove at vast expense the whole of the later monuments, to reach the earlier levels. Did not any part of the antediluvian city lie clear of the later platform ? J. L. MYRES.

LES ORIGINES DU TITRE DE SAINT-MARTIN AUX MONTS A ROME. *By* RENÉ VIELLIARD. (Studi di antichità cristiana publ. per cura del Pontificio Instituto di Archeologia cristiana, vol. IV). *Rome* ; *Paris*, 1931. *pp.* 133. 40 *lire.*

The Christian community of Rome was, at an early date, divided into parishes called titles (*tituli*), which were named at first after the founder of the church, often a layman who had given or built the house which became the meeting-place of the congregation. At the beginning of the fifth century there were twenty-five titles, but many of them dated back from a much earlier time, sometimes as early as the third century. In a few cases the original meeting-house still remains buried in the crypt of the present church or hidden behind some later buildings. But a comparative study of written documents (such as the *Liber Pontificalis*) and archaeological remains may throw a new light on both the primitive churches of Rome and the administrative history of the Christian community.

In a monograph written under the supervision of the Pontifical Institute of Christian Archaeology, M. Vielliard has achieved this purpose for one of the most interesting of the titular churches, St. Martin in Montibus. His conclusions can be briefly summarized here. The title was founded in the early third century by one called Equitius, probably under Pope Callistus (217–22), at any rate in the time of the Severi, and at a date contemporary with the buildings of San Clemente, Santa Anastasia and SS. Giovanni e Paulo. Whereas in the other three churches the Christians simply bought an ordinary Roman house and reconditioned it in order to have, on the first floor, a big meeting hall (*salle liturgique*), at St. Martin, on the contrary, it seems as if they built the house on purpose : the ground-floor was almost entirely occupied by a hall, large enough to accommodate a congregation of 200 ; the court-yard was thus thrown to one side, with the staircase leading to the cellar ; at the main entrance was a short triangular vestibule, and another staircase leading to the two upper-floors, where the clergy had their living quarters.

In the beginning of the sixth century, the house, which was then known as *titulus* Silvestris, and had become a popular place of devotion to the memory of Pope Silvester, was too small to house an increasing congregation; but it was left practically untouched by Pope Symmachus who preferred to build, next to it, a large basilica dedicated to St. Martin. Alterations were made in the course of the 9th century, and later in the 13th, when Franciscan monks took charge of the building and remodelled it for housing their convent. But, if massive pillars, new walls and arches have done much to disfigure the original house and puzzle the archaeologist, the main walls and the primitive vaulting are still there, and Rome can claim, according to M. Vielliard, ' to have thus, almost untouched, one of her third-century churches '. E. PERROY.

WATERS OF ARUN. *By the late* A. HADRIAN ALLCROFT. *Methuen*, 1930. *pp.* XIV, 170, *with* 6 *illustrations and* 21 *maps.* 7*s* 6*d.*

This is an interesting book on one of the most fascinating of southern rivers, written in the easy, pleasant, almost 'chatty', style one has learnt to expect when the author wrote about Sussex.

He starts from an ancient road which, running through a part of Arundel Park,

where there is evidence of Romano–British occupation, goes straight down to the river. Here he sought and found a shelf 10 or 12 feet wide and about six feet high on the upper side crossing the bed of the river at right angles and in line with the ancient road.

Convinced that this must be an artificially made Roman causeway, and recognizing that at its present depth—3 feet below water at the lowest tides and 15 at the highest—it could not have been a practicable crossing, he sets out in ten chapters to assemble all the evidence he can find to prove that the Arun is not really the dwindled estuary of ' the literary tradition ', but rather a stream in which tidal waters have been steadily gaining and the channel deepening since Roman times.

The quest takes us through much pleasant country ; over downland and meadow, along bypaths and old parish boundaries, over lost roads and forgotten fords, by dredged channels and navigation cuts, to derelict quaysides and old harbours, over long ' fulls ' of shingle and stretches of ancient ' havens ', past the new mouth of later commerce to the old outlet miles to the east and even out to sea over miles of ancient Sussex now submerged. All this is discussed with an extraordinary wealth of knowledge : ancient charters, manorial records, ecclesiastical sites, feudal changes—every sidelight of local history is brought to bear on the problem, and with never a tedious line.

The book is not of course all serious, still less rigid, archaeology. The author's narrative style makes little distinction between his proved facts and his inferences and he never pauses to marshal the one or to weigh the other. He pleads his case with charming advocacy and makes no pretence at an impartial summing up. But as a companionable and scholarly guide through a delightful country with all the interest of an unsolved problem to lure us on the book could hardly be bettered.

' Waters of Arun ' is published as a memorial volume by the Brighton and Hove Archaeological Club. A list of the author's publications is given consisting of four books, headed by *Earthwork in England* in 1908, to which all field-archaeologists owe an abiding debt as the first and only classic on the whole subject, and 20 papers contributed to divers journals, mostly on Sussex archaeology. It would be a great boon if these stimulating papers which form the basis on which he built so much of the lighter structure of his ' Downland Pathways ' could be republished in one collection.

All who knew the author and his work will appreciate Dr Cecil Curwen's In Memoriam notice.

J. P. WILLIAMS-FREEMAN.

DER BREITE BERG BEI STRIEGAU ; eine Burgwall-untersuchung. *Bearbeitet von* G. BERSU, H. KURTZ, E. PETERSEN *und* H. SEGER. (Schlesischer Altertumsverein in Breslau). Teil 1. Die Gräbungen, *by* G. BERSU. *Grass, Barth & Co., Herrenstr.* 20, *Breslau. pp.* 46 *with* 38 *illustrations and* 4 *plates in colour.* 24 *marks.*

This is an elaborate account of excavations carried out on the site of the hill-fort on the hill known as Der Breite Berg. The hill was fortified first in Hallstatt times ; though these fortifications were of no great strength the site seems to have been occupied for a considerable time, and foundation-posts of rectangular houses of the period were found. This occupation seems to have ended in burning and catastrophe, and the numerous triangular bronze arrowheads found are thought to have been missiles used by the enemy in their attack upon the place. The hill was then abandoned until it was very strongly fortified by Slavonic people. The excavations seem to have been carried out with great care and thoroughness, and many interesting details of the Slavonic fortifications were obtained.

In conformity with the shape of the hill the area entrenched was roughly triangular ; the point of this triangle was strengthened by wooden towers, but the base line has been destroyed by modern stone quarrying, so the main entrance or gateway was not available for examination. On both sides of the hill just within the entrenchment, and roughly parallel with it, were foundations of rows of wooden rectangular houses of the Slavonic period.

The plans and drawings illustrating the work are excellent, but the photographs of sections are not as good as they might be. The finds seem to have been numerous, especially for the second, or Slavonic period, but these are to be dealt with separately in a later publication. M. E. CUNNINGTON.

KULTURGESCHICHTLICHE WEGWEISER DURCH DAS RÖMISCH-GERMANISCHE ZENTRAL-MUSEUM. Nr. 13 : Numantia und seine Funde, *von* FRIEDRICH BEHN. *Mainz, Selbstverlag des R-G. Zentral-Museums*, 1931. *pp.* 48, *figs.* 1–33. 0.50 *Rm.*

This excellent guide to the Numantia collection in the above Museum gives a successful general sketch of the Iberian town and Roman siege-camps whence the collected material came. Both photographs and plans give the essential and typical without undue detail, and the text is beautifully clear. All students who cannot afford Schulten's monumental volumes, and all travellers who cannot carry them, must have this tiny book on their shelves or in their pockets : while the guardians of some of our own important Roman collections might emulate this example with advantage to the public and themselves. I. A. RICHMOND.

EXCAVATIONS AT EUTRESIS IN BOEOTIA. *By* HETTY GOLDMAN. *Harvard University Press and Oxford University Press*, 1931. *pp.* 294 *with* 20 *plates and* 2 *maps.* 73*s* 6*d.*

Dr Goldman is to be congratulated on establishing by methodical excavation and prompt publication the Bronze Age culture-sequence for Central Greece that should have been worked out twenty years ago, had the excavations at Orchomenos or Hagia Marina been properly conducted or published. Now Eutresis provides for this neglected area a stratigraphically established succession of phases comparable to those long familiar in Crete: the Cyclades, the Peloponnese, Thessaly and even Macedonia.

The town lay on the road from the Gulf of Corinth to Thebes and, though unimportant in classical times, seems owing to this situation to have enjoyed a modest prosperity during the Bronze Age. The debris of prehistoric settlements has formed an accumulation 6.50 to 7 metres deep. Of this (apart from a few hut-foundations partly excavated in the subsoil and assigned to ' neolithic ' times) 4 metres represent Early Helladic occupations, 2 Middle Helladic, and half a metre Late Helladic III (Late Mycenaean). It should be noticed that the authoress uses the term Middle Helladic in a cultural, not a chronological sense : Middle Helladic is extended to embrace the chronological phases termed in the Peloponnese Late Helladic I and II (the Early and Middle Mycenaean of Forsdyke), since the importations or imitations of Cretan pottery that distinguish these phases further south have not affected the Boeotian village. Making allowance for this discrepancy, it will be seen that the relative depths of the deposits is roughly proportionate to the absolute duration of the respective periods that might be expected on the analogy of the Cretan chronology : the two metres of Middle Helladic

would represent the interval between 2000 and 1400 B.C.; the Early Helladic layers the preceding millennium. But since the Middle Helladic occupation was probably less intensive than the previous one, the above argument must not be strained. Dr Goldman herself, like Dr Frankfort, contends that Middle Helladic began with Middle Minoan I in Crete rather than with Middle Minoan II as Wace and Blegen have argued.

For the rest the publication, with its plans, excellent photographs and fine coloured plates (but scales are never given!) enriches our picture of the Aegean Bronze Age, the main outlines of which are already familiar. At the same time it opens up vistas of wider relations. The sherds from the neolithic hut-foundations can be exactly matched at Vinča (Dr Goldman like Dr Frankfort will write Vinça though the word is pronounced Vintsha) on the Serbian Danube, and so reinforce the idea of a cultural community spreading right across the Balkans which Dr Frankfort has so ably expounded (but if it be called Danubian that can only be in a quite different sense to that implied when speaking of say the Belgian Omalian) and favour a high dating for the Serbian site.

Then in the Early Helladic III level appear sherds decorated with triangles formed by the imprint of lengths of cord. These are justly termed ' corded ware ' and naturally compared with the best known representatives of that group in Saxo–Thuringia. But Rosenberg's researches now suggest that these latter are but offshoots of a great family cradled in the Ukraine. The sherds from Eutresis, which are by no means unique in Greece, might then be brought into relations with battle-axes and other objects of South Russian type recently noted by Heurtley in Macedonia.

Finally Dr Goldman insists on the identity of the peculiar kiln-fired deoxidized grey ware termed Minyan in Greece with the grey ware of Anau in far Turkestan. And in the meantime comparable fabrics are turning up in Mesopotamia and even in India. So the thesis that this particular pottery was the invention of Central Greece—a thesis first expounded by the reviewer and subsequently espoused by Dr Frankfort—may have to be revised again.

V. GORDON CHILDE.